MEDICAL LIBRARY SEP 2 1947

The Journal of the *International College of Surgeons*

TWELFTH NATIONAL ASSEMBLY
United States Chapter International College of Surgeons,
Palmer House, Chicago, Illinois,
September 28 to October 4, 1947

Vol. X *July-August, 1947* No. 4

Going to the Chicago meeting?

Don't miss the Roche exhibit!

If you plan to attend the Chicago Assembly of the International College of Surgeons, we hope you will find an opportunity to visit the Roche exhibit in Booth 61.

It will give us real pleasure to greet our old friends and to make the acquaintance of new ones. We shall be glad to answer your questions about Prostigmin, Synkayvite, Berocca-C, Syntropan and other Roche products, and we shall be happy to supply you with whatever samples and literature you may desire.

Should you be unable to go to the convention, our professional service division will be glad to answer your questions about Roche products and to supply you with samples and literature.

Drop in and see us at booth 61

HOFFMANN - LA ROCHE INC

Roche Park • Nutley 10 • New Jersey

Original Articles

The Complications of Abdominal Surgery
Their Prevention and Management*

W. WAYNE BABCOCK, M.D., F.A.C.S., F.I.C.S.†
PHILADELPHIA

THE complications of abdominal operations begin with the induction of the anesthetic agent and the first incision, and do not end with the convalescence of the patient. Most surgeons have seen a viscus incised or torn with the initial incision; a few, an unexplained death due to an overlooked intestinal needle puncture accidentally made during the abdominal closure, while many have found a late postoperative complication due to technical error during the operation. The old and harmful precept to make a new incision rather than to excise an old adherent abdominal scar frequently leads to new adhesions and an incomplete repair of the old damage. In recent years, a new series of accidents has followed the tendency to pass to highly specialized anesthetists responsibilities which the operating surgeon is in better position to understand and control.

In reviewing the early abdominal hysterectomies performed in the pre-antiseptic era, I was surprised to find that most of the postoperative deaths were due not to sepsis but to secondary hemorrhage. There is much less excuse for such hemorrhage today, and yet a dangerous hemorrhage will occasionally occur unless certain precautions are taken. In applying ligatures, small pedicles should be used, and for larger vessels two instead of one ligature employed. It must be remembered that ligatures are more apt to slip from large veins than from large arteries, but for both, transfixion and double ligation are well worth the additional time required. Catgut is less secure than silk, linen or cotton, as the catgut knot swells, becomes slippery and tends to untie in contact with moisture. It is wise, therefore, to tie catgut with three hitches in the knot. Catgut has the one advantage of being eventually absorbed. Of the nonabsorbable suture materials, stainless steel wire, tantalum wire or silver have the advantage of being well retained in a septic field if in small bulk. For example, individual stainless steel wire sutures, tied with a square knot and the ends cut close to the knot, rarely cause secondary irritation, which may however, occur if long ends are left projecting from the knot.

WOUND SEPARATION OR DEHISCENCE

Dehiscence of the abdominal wound is about eight times as common when catgut is used in the closure as when an all-wire technic is employed. Thus, of 4,000 operations performed at Temple University Hospital, in 2,000 of which an all-wire suture technic was employed, there was but one dehiscence; while of the 2,000 in which other suture materials were used, there were eight cases of wound separation. Experience has shown that a wound partly closed with wire and partly with catgut also is more prone to suppurate and to separate than when closed entirely with nonirritating wire sutures.

INCISURAL ABDOMINAL HERNIA

Most secondary or recurrent hernias are due to the catgut used as a suture material. Surprisingly enough, the highest incidence from any one suture material has been reported from fascial sutures. Thus, in Burdick's report [1] of 1,485 hernias closed with fascia, from

* Read before the Eleventh National Assembly, United States Chapter, International College of Surgeons, Detroit, Michigan, October, 1946.
† From the Surgical Department of Temple University, Philadelphia.

27.7 to 35.5 per cent were followed by recurrence. This may be ascribed in part to the crude type of closure from the use of wide strips of fascia and elephantine needles, and in part to the absorption and disappearance of even autogenous fascia lata. In a number of secondary operations I have been unable to detect any residual fascial sutures in the wound. The use of fascia in the repair of hernias also was followed by the highest incidence of wound infection and the highest mortality (2.3 per cent). Silk or cotton sutures are preferable but are not as good as those of stainless steel wire. Secondary hernias from poor closure of the abdominal wound are not only disabling but may lead to death through obstruction or strangulation. A number of enormous abdominal hernias following appendectomy, cholecystectomy, intestinal resection or other abdominal operation were successfully repaired with interrupted layer sutures of alloy steel wire having a maximum size of 30 gage.

COMPLICATIONS FROM SUTURING

As an intern, I saw two patients after a simple abdominal operation become distended, develop severe abdominal pain and die; in each case the autopsy showed that the small intestine had been punctured by the curved needle used in closing the abdominal wound. Not long afterward the surgeon in a hospital where I worked accidentally punctured the femoral artery in closing an inguinal hernia wound. To arrest the bleeding he then exposed the femoral artery, whereupon the bleeding became very free, so that he ligated the femoral artery. This resulted in gangrene of the man's foot, necessitating amputation; the patient died. During the recent war there have been a number of instances in which the femoral artery or vein had been punctured by the needle in the performance of hernioplasty, and where the surgeon has ligated the femoral artery, with secondary gangrene and the need of amputation. It seems important, therefore, to emphasize that large, cutting-edged needles should not be used for the deep sutures of an inguinal or femoral hernioplasty. If blood spouts from the needle hole, indicating that the femoral vein or artery has been punctured, all that is necessary to do is to tie the suture and the bleeding will stop. I know of no ill effects that have followed this simple method of eliminating a dangerous complication. Quite different are the injuries to the femoral vessels from the massive needles used for sewing fascia lata. The violent hemorrhage which ensues has been fatal in a number of instances. An arterial suture should be used rather than a ligature.

MULTIPLE ABDOMINAL SCARS

In pre-anesthetic days, the surgeon, to save time and to avoid cutting into adherent bowel, did not excise or cut through an existing abdominal scar but made his incision in a new area where it was felt there would be no adhesions. This tendency to make multiple abdominal scars has been carried over even to the present time, greatly to the patient's disadvantage. As a rule, the surgeon should excise the old abdominal scar, for the best access is then obtained to underlying adhesions and complications. If the operation is done deliberately and carefully, there is little excuse for accidental injury to underlying structures. At the completion of the operation an objectionable type of scar is then replaced by a much more secure and less disfiguring one. In one case a patient had five operations performed in different parts of the country, and each of the five surgeons made a new and disfiguring scar. In a similar case the operator at the last operation poured a pint of mineral oil into the abdomen to prevent adhesions, and then, of course, as fibrous encasement formed about each droplet of oil, an adhesive peritonitis of superlative degree developed.

INTESTINAL FISTULAS

These are quite common following abdominal operations and may be very dangerous. A common type is that which occurs in necrotic and suppurating abdominal wounds. If from the small intestine, the discharge is free and exceedingly irritating to the skin with which it comes in contact. When it is realized that a mortality of 6 or 7 per cent follows ileostomy, largely from the loss of metabolites, the danger from even smaller external openings in the jejunum or duo-

denum can be appreciated. Some even believe that duodenal external fistulas are incurable and always eventually fatal. An injury to the duodenum in clamping or ligating the pedicle of the right kidney during nephrectomy has been the usual cause. A gastroenterostomy does not improve the condition. The fistulous opening should be exposed, usually through an abdominal incision, and the edges carefully inverted with a fine eye needle, and 36 or 38 stainless steel sutures made with the parts so liberated that there is no tension on the suture line. From other suture material I know only of failure, and consider it very important that no catgut be used in the wound. A more offensive, very troublesome, but less dangerous type of fistula occasionally follows removal of the left kidney, from injury of the descending colon in ligating or dividing the renal pedicle. As the fecal discharge occurs upon the loin, it is difficult for the patient to care for himself. Operative closure with an all-wire technic is advised as soon as the wound becomes clear of necrotic material. Other fistulas occur after vaginal hysterectomy or intestinal resection.

Closure of fistulous tracts, as demonstrated by Marion Sims 100 years ago, is best accomplished by nonirritating metallic sutures. Sims is said to have closed 200 vesicovaginal fistulas with silver wire sutures. Silver has very little tensile strength, cannot be tied in a secure knot, and stains the tissues a dark green color, so that it has properly been replaced in recent years by fine stainless steel sutures. The frequent failures that now occur in the closure of vesicovaginal fistulas are due largely to the use of catgut. With accurate closure with fine alloy steel wire, it is unnecessary, as stated, to fasten the patient face downward on a Bradford frame or otherwise restrict movements in bed. Convalescence is rapid, and previous failures from closure by catgut do not usually prevent the successful use of the metallic suture.

SHORT-CIRCUITING OPERATION

It has been common practice to eliminate on obstructed, fistulous or strictured portion of the intestinal tract by a side-to-side anastomosis between the small bowel and the colon. The result of such a short-circuiting operation is often very distressing. Gas from the distended colon is vented into the small bowel, with serious interference with normal peristalsis and marked distention and dilatation of small bowel, so that in time it may acquire the size and much of the appearance of the colon. Conflicting intestinal currents engendered by the side-to-side anastomosis lead to distressing colic. Often the patient continues to have much trouble from obstipation, and the abdomen may become greatly distended. If barium is then given for roentgen study, it may harden in the intestinal tract and remain for many months—an added source of discomfort. To relieve patients of this type, the troublesome segment should be completely removed and an end-to-end anastomosis performed.

POSTOPERATIVE ILEUS

Postoperative ileus is especially common after resections of the gastro-intestinal tract and other operations associated with much peritoneal irritation. The routine use of suction (sump drains) has revealed that 24 hours or more before the abdominal distention, colic, nausea and vomiting develop, there is a free outpouring of clear serum into the abdominal cavity. In this early period the evacuation of the liquid exudate by suction drainage and decompression of the gastro-intestinal tract by indwelling aspirating tube will frequently relieve the condition without resort to other measures except the exclusive use of parenteral feeding. Ileus, however, is to be divided into two types. The first occurs in the early postoperative period, during the three or four weeks immediately after operation, where a loop of bowel usually has slipped into the pelvis, has become adherent and kinked or angulated, with obstruction without strangulation. For this type, if the abdomen is reopened and the adherent bowel separated, there is transient relief but adhesion commonly recurs, with return of the obstructive symptoms. With adequate decompression of the distended bowel, the obstruction is usually permanently relieved. Therefore, if an indwelling intestinal tube fails to give relief, a 16 F. rubber catheter should be introduced

into what seems to be the most distended loop of bowel through a small external incision. The area of greatest distention and tympany, or that in which an especially distended loop of bowel may be palpated, is selected and exposed under local anesthesia, usually through a small muscle-splitting incision. Two concentric purse-string sutures of silk or other insoluble material are introduced about a withdrawn small cone of lateral bowel wall which is brought through the small incision, perforated and a 16 or 18 F. catheter tied in by the inverting purse-string suture. The wound is lightly closed around the tube and bowel wall with interrupted sutures, preferably of stainless steel wire, and the outer purse-string suture held against the abdominal wall by tying it over a dental cotton roll placed upon the abdominal surface. Gentle irrigation with warm saline or with a 10–20 per cent solution of glycerin by gravity is started and repeated every two hours until decompression is accomplished. If the condition is advanced and peristalsis has ceased, it may be necessary to introduce a similar tube into several portions of the intestinal tract before adequate decompression is accomplished. Thus we have seen recovery occur in an apparently moribund patient, in whom an ileus from peritonitis did not improve from an ileostomy or later cecostomy, until a transversostomy was added. Obviously, with an ileus developing months or years after an abdominal operation or a previous attack of peritonitis, the second or strangulating type of obstruction is to be expected, and an operation should be performed without delay. The structures lying beneath the old scar should first be exposed, provided there is no clear evidence of obstruction in some other portion of the abdominal cavity. Performed early, the operation often requires nothing more than the cutting of an adhesive band; if performed late, the surgeon not only finds gangrenous bowel but peritonitis and often a perforation.

DRAINAGE OF BILE DUCTS

Many years ago Halsted demonstrated that abdominal drains not only give exit to fluid from within the abdomen, but also are soon followed by the entrance of bacteria from the outside to the depths of the drainage tract. A T or other type of rubber drainage tube left in the bile duct therefore not only produces the mechanical and chemical irritation characteristic of rubber, but also infects the duct by providing an entrance for bacteria from the outside. Thus, at the completion of the drainage and removal of the tube, an infected and damaged duct remains, in which there is often a chronic inflammatory process with tendency for calcareous deposits. This in part explains why a duct that once has been drained, often has a recurrence of biliary calculi, with the necessity for repeated operations. After two or three such operations the patient rarely completely recovers. I have found that some of these patients with recurrent colic show a marked improvement under the daily injection of 5–10 units of insulin, although there may be no evidence of diabetes. The complications in patients after tube drainage of the common bile duct have led me to discard intraductal drains, to close the duct with fine stainless wire sutures and to leave an adjacent suction (sump) drain in place during the first few postoperative days to remove any bile that may leak into the cavity. The modification, carefully carried out, has been found to be safe and has greatly shortened the period of hospitalization of these patients.

SUMMARY

The author discusses the various complications which may follow any abdominal operation and particularly recommends the use of all-wire sutures to prevent some of them. He frowns on the prevalent tendency to make a new incision for each new operation and points out that the old abdominal scar should be excised when there is need for another operation. Fistulas of various kinds are less apt ot occur if an all-wire technic of suturing is used.

RÉSUMÉ

L'auteur discute les différentes complications qui peuvent suivre les opérations abdominales. Il recommande avec conviction l'emploi de sutures métalliques afin de diminuer la fréquence de ces accidents. Il s'oppose aux incisions multiples et est partison de l'excision

de l'ancienne cicatrice quand il est nécessaire de soumettre le ou la malade à une opération secondaire. Il est d'avis que les fistules surviennent moins souvent avec l'emploi de sutures métalliques.

SUMARIO

El autor trata de varias complicaciones que pueden seguir a una operación abdominal y recomienda, de modo particular, el uso de suturas de alambre para prevenir algunas de dichas complicaciones. Ve con desagrado la tendencia prevalente a hacer una nueva incisión por cada nueva operación y señala que la vieja cicatriz abdominal debeser cortada cuando exista necesidad de otra operación. Si se use la técnica del alambre en las suturas, se producirán muchas menos fístulas.

SOMMARIO

L' autore discute le diverse complicazioni di cui seguono chiunque operazione addominale e particolarmente raccomanda e uso di sutura di filo d' acciaio per prevenire delle complicazioni. Ad egli non piace la prevalente tendenza di fare nuova incisione per ogni nuova operazione e dice che la vecchia cicatrice addominale dovra essere tolta quando vi e bisogno di altra operazione. Fistola di diverse forme sono meno di capitare se la tecnica dell' uso di tutto filo d' acciaio viene seguito.

Свод.

Автор разбирает разные осложнения после брюшных операций и особенно рекомендует употребление проволочных швов для предотвращения этих осложнений. Он не одобряет общую тенденцию делать новый надрез для каждой операции и указывает, что старый шрам должен быть иссечен, когда нужна новая операция. При употреблении проволочной методики зашивания разные фистулы не случаются так часто.

BIBLIOGRAPHY

1. Burdick, C. G.; Gillespie, D. H. M., and Higinbotham, N. L., Fascial Suture Operations for Hernia, Ann. Surg. **106**:333, 1937.

The "JOURNAL OF THE INTERNATIONAL COLLEGE OF SURGEONS" is an *open forum.* Its pages serve as a medium of expression for surgeons who have a worthy message for others in their field.

The editors of the "JOURNAL" therefore welcome the opportunity to consider for publication all material which may be of interest to those engaged in any branch of the wide field of surgery, *whether members of the International College of Surgeons or otherwise.*

Injuries and Aneurysms of the Vessels of the Neck*

RAYMOND W. McNEALY, M.D., F.I.C.S.†
AND
MANUEL E. LICHTENSTEIN, M.D.†
CHICAGO

INJURIES to the large vessels in the neck are always serious. The presence of bleeding which occurs immediately may prove rapidly fatal if control is not at once instituted. When blood escapes into the loose tissues of the neck, a progressive hematoma may threaten the patient's life by obstructive strangulation. It is fortunate that the trachea and esophagus are seldom concomitantly injured when gunshot or stab wounds have involved the large vessels of the neck. This is accounted for by the fact that the majority of neck injuries from these wounds usually traverse the neck from before backward. Only an occasional wound passes transversely to involve the major structures including the vessels and air passage with survival of the patient. There is, however, the occasional patient who receives an injury to the large vessels and also has an injury to either the esophagus or trachea with bleeding into the esophagus or aspiration of blood into the lungs. A patient who survives the immediate impact of injury may subsequently have his life jeopardized by external secondary hemorrhage or spreading extravasation. He may at some later date, even years afterward, develop an aneurysm at the site of injury. This aneurysmal dilatation may ultimately enlarge and produce symptoms which will warrant a surgical attack on the involved vessel segment.

In an approach to injured vessels in the neck, it is imperative that provisional control be worked out in a manner that will insure against calamatous hemorrhage.

Even though technical management be well in hand, there is always the unpredictable result which may follow ligation of the common carotid or the internal carotid artery. In the management of hemorrhage from the large vessels in the neck, one is very frequently confronted with a true dilemma. If the bleeding is not immediately controlled, the patient may die from rapid loss of blood. On the other hand, if the artery is ligated, paralysis or death may result from a disturbance in the circulation of the brain.

The following two case reports illustrate these dangers.

Case 1.—Baby K., aged 14 months, in October, 1944, swallowed an open safety pin which lodged in the lower part of the pharynx. The pin was removed, followed by considerable bleeding. One month later a swelling was noted on the left side of the neck. This mass pulsated with the heart beat and was medial to the position of the common carotid artery. By June of 1945, it had attained a size sufficient to warrant exploration of the lesion. On June 25, 1945, a sacular aneurysm involving the left common carotid artery was exposed, the sac was excised and the defect in the artery was sutured. Immediately after the operation paralysis of the right side of the body was apparent. The child never regained consciousness and died on the second postoperative day.

Case 2.—Pvt. N., aged 18, sustained a shell fragment wound of the neck on Jan. 11, 1944, and was admitted to the hospital 10 hours later. He complained of difficulty in swallowing, was dyspneic and had considerable swelling of the neck. There was a small wound of entrance on the right side at the level of the cricoid cartilage. All structures in the pharynx were hemorrhagic and edematous. An x-ray study showed considerable deviation of the trachea to the right with a foreign body lodged in the left supraclavicular fossa. At operation an arteriovenous communication between the common carotid and internal jugular vein was exposed. A large accumulation of blood was evacu-

* Read before the Eleventh National Assembly, United States Chapter, International College of Surgeons, Detroit, Michigan, October, 1946.
† From the departments of Surgery of Wesley Memorial Hospital, Cook County Hospital and the Cook County Graduate School of Medicine.

ated from the adjacent spaces. In spite of control of the common carotid artery and internal jugular vein, a brisk flow of blood filled the wound. Pressure over the subclavian controlled this bleeding. It was found that the source of this bleeding was the completely severed inferior thyroid artery. The proximal and distal ends of this vessel were ligated. The common carotid artery was ligated proximal and distal to the injured zone, and the intervening segment was removed. The internal jugular vein was similarly excised following high and low ligations. The neck wound was not sutured but closed by turning the head to the left. Recovery was uneventful, and on Jan. 21, 1944, he was evacuated to the base hospital. There were no mental changes, and no central or peripheral nervous system alterations were noted. On Feb. 1, 1944, complete closure of the neck wound was done under gas-oxygen anesthesia. Postoperatively he had a right hemiplegia. During the following four weeks he made a gradual recovery and when last seen at that time was up and about, but wrist drop was still present.

It is readily understood that with occlusion of the common carotid or the internal carotid, a marked diminution in the blood supply to the brain must result. It is difficult to explain why in some patients this brain anemia is temporary and not destructive of the functions of the brain, while in others changes of great severity rapidly ensue. Many theories have been offered, but there is probably not one which will satisfactorily explain the phenomena in every case.

Anatomists have pointed out the anomalies and variations in the circle of Willis and have indicated how a decreased flow of blood to the brain may follow ligation of only one of the main vessels. It has been estimated that the human brain accounts for 8–10 per cent of the basal metabolism.[1] Gray matter is highly susceptible to deprivation of oxygen. This is especially true of the higher centers. The cerebral circulation time (carotid to jugular by the radium emanation method) is about 3 seconds. Since the mass of intracranial blood cannot be much greater at one moment than another, a greater oxygen supply to the brain is assured largely by an increase in speed of the blood through the individual vessels rather than by an enlargement in the total capacity of its vascular bed.

The sudden occlusion of one of the main supplying channels immediately increases the demand for blood through the remaining channels supplying the brain. The anatomic arrangement of the vessels in the circle of Willis is not constant, and there are peculiarities in the makeup of the blood vessel branches of this circle.

Fawcett and Blackford[2] in 700 cases found a complete symmetrical circle in 73, a complete but asymmetrical circle in 13 and an incomplete circle in 4. Windle[3] in 200 cases found a complete circle in 83 and an incomplete distribution in 17. Busse (quoted by Dorrance[4]) in the examination of 400 brains found no instance in which the anterior communicating artery was missing, and stated that when the posterior communicating artery was absent, it was usually compensated for by other anastomoses. Homans,[5] on the other hand, was unable to find in the literature any instance of death following ligation of the carotid artery in which an anomaly of the circle of Willis was present.

Besides variations in the vessels which constitute the circle of Willis, there are differences in the size of the individual vessels which vary from patient to patient. Fetterman and Pritchard[6] point out that whereas there is anatomic continuity between the vessels, the marked angularity and the different caliber of the vessels may be responsible for a reduced flow of blood in certain fractions of the brain; e.g., the lumen of the middle cerebral artery appears as a direct continuation of the internal carotid artery. The posterior communicating artery is frequently a narrow vessel joining the middle cerebral artery at right angles. The amount of blood which could enter the large middle cerebral artery may be inadequate, particularly where the effective blood volume has already been seriously reduced by hemorrhage. The volume which could enter the cortical substance, therefore, by a collateral route may not be sufficient.

Pathologists have pointed out the histologic changes in the brain which result from thrombosis and embolism. While an anatomic reduction in blood supply will result in immediate changes in the brain, thrombosis and embolism may account for symptoms and

signs of deprivation of blood at some time after ligation is done. The progressive advance of a clot along an occluded vessel may further cut off vessels supplying blood to the brain, or an embolus may block vessels and be responsible for anemia of the cortex. Dandy [7] has recorded clinical observations from his own material and from reports in the literature concerning changes in the brain following thrombosis and embolism.

Physiologists have attributed the immediate and late changes in the brain to anoxia with resultant chemical changes adversely influencing the cerebral cortex. Loss of blood due to the injury reduces the total blood volume and results in anemic anoxia. The difficulties associated with respiration during anesthesia also can reduce the oxygenation of the blood (anoxic anoxia). With the slowing of the movement of blood through the capillaries due to ligation of the major vessels, stagnant anoxia occurs. All of these forms of anoxia have similar effects on the cortex.

Cerebral symptoms may also result from the carotid sinus reflex. A hyperactive carotid sinus may be stimulated during the manipulations of the carotid artery at the time of repair. Weiss and associates [8] explain the likely mechanism of the reflex as due to increased impulses reaching the brain through the nerve of Hering. The efferents of the reflex are transferred through (1) the vagus, producing slowing of the heart, (2) vasomotor depressor nerves, producing peripheral vasodilation and a fall in blood pressure and (3) central motor pathways, producing cerebral symptoms without bradycardia or a fall in peripheral blood pressure.

Vascular spasm due to local trauma from the original injury or as a result of operative manipulation may also play a role. Peripheral vessels are often afflicted in this manner (arterial stupor).[9]

In considering these possible factors which may produce the immediate, progressive or late cerebral changes following carotid artery ligation, certain measures may be employed to reduce the danger to a minimum. While the anatomy of the circle of Willis cannot be changed, collateral circulation may be improved in the elective case. Matas [10] has emphasized the value of compression of the artery for increasingly longer periods of time. Dandy [11] was impressed by the better results which followed the use of preliminary compression. He states: "there can be no doubt that the application of the Matas test used throughout this series, i.e., compression of the internal carotid with the finger for 10 minutes to determine whether or not cerebral functions are disturbed, is responsible for the low figures both of mortality and cerebral complications." Thrombosis and embolism may be reduced to a minimum by the exercise of care in the surgery instituted. Ligations [12] with excision of damaged tissues and the careful handling of the structures serve to reduce to a minimum the accumulation of those hemocoagulating factors conducive to thrombus formation.

In the urgent case requiring immediate care, adequate blood replacement with restoration of the blood volume to a normal level is not only desirable but imperative if the best results are to be expected. Oxygenation at maximum levels is always desirable, but the most critical period is during the time of anesthesia and while surgery is in progress. Anesthesia must afford a high oygen intake. A competent anesthetist familiar with the necessary technics and conscious of the special needs of the patient with this type of injury is a valuable asset. Local anesthesia for an elective procedure may theoretically be most desirable in avoiding the anoxia associated with general anesthesia. However, a recently injured patient, in full knowledge of his neck injury, especially when some dyspnea is present, is usually very anxious to be put to sleep. In addition, where the exposed wound is obscured by blood and damaged tissue, complete anesthesia with local injections of novocaine may not be possible. A seriously wounded patient should not be subjected to avoidable physical or mental pain. A struggling patient cannot cooperate, and a bleeding neck requires a deliberate and careful approach to prevent adding to the damage already done by the injury. In a group of successful cases it was noteworthy that almost all of the patients with neck wounds involving

the carotid artery were awake immediately after surgery was completed. They had had gas-oxygen-ether anesthesia administered by a competent anesthetist who used the endotracheal technic.

Makins [13] stresses the danger of secondary hemorrhage in infected wounds and emphasizes the high mortality rate in these cases. The judicious use of penicillin is a valuable addition to the field of vascular surgery. It can be used to overcome existing infections and to abort threatened infection.

SUMMARY

In those patients requiring immediate control of bleeding from a large vessel in the neck, adequate blood replacement before and during surgery is necessary. An anesthetic offering a high oxygen content with free passage of oxygen into the lungs is imperative. Thoughtful planning for provisional control of bleeding from an injured vessel will avoid unnecessary loss of blood. Excision of damaged tissue will prevent to some degree thrombosis and embolism. Cleansing of the contaminated wound and the use of penicillin help to avoid infection and its sequels. A patient who sustains an injury to a large artery, and at a later date has an aneurysm develop at the site of injury, is offered a much greater opportunity for the development of collateral circulation. This is greatly facilitated by intermittent compression of the involved vessel. Short periods of compression are lengthened to the point where no subjective symptoms develop as the result of continued occlusion of the vessel.

RÉSUMÉ

Chez les blessés qui saignent abondamment d'un large vaisseau du cou il est necessaire de transfuser du song avant et durant l'acte opératoire. Il importe d'employer un anesthésique qui renferme beaucoup d'oxygène et de s'assurer que l'oxygène pénètre librement dans les poumons. On doit empêcher toute perte inutile de sang. L'excision des tissus lésés diminue l'incidence de la thrombose et de l'embolisme. L'emploi de la pénicilline est indiqué pour prévenir ou atténued les phénomènes infectieux. Le développement d'une circulation collatérale améliore le pronostic des opérations pour anévrismes survenant après les traumatismes artériels. La compression intermittente du vaisseau lésé aide au développement de la circulation collatérale. On augmentera la rurée des seances de compression graduellement. Jusqu'a ce qu'on obtienne une absence complète de symptômes due à l'occlusion complète du vaisseau lésé.

SUMARIO

En aquellos pacientes que requieren inmediato control de la hemorragia de un vaso grande de la nariz, es necesario reemplazarles sangre adecuada antes y durante la intervención quirúrgica. Es imperativo un anestético de alto oxígeno con libre paso del oxígeno al interior de los pulmones. Un meditado plan para el control provisional de la hemorragia de un vaso lesionado puede evitar innesaria pérdida de sangra. El corte de tejidos dañados prevendrá algunas trombosis y embolias. La limpieza de la herida contaminada y el uso de la penicilina ayuda a evitar la infección y sus consecuencias. Un paciente que sufre una lesión de arteria grande, ye que en fecha posterior se le desarrolla un aneurisma en el lugar de la lesión, ofrece una mayor oportunidad para el desarrollo colateral de la circulación. Esta es facilitada grandemente por la comprensión intermitente del vaso afectado. Cortos períodos de comprensión son alargados hasta el punto donde no se desarrollen síntomas subjetivos como resultado de la continuada oclusión del vaso.

SOMMARIO

Nell' infermo richiede immediato controllo dello scorrimento di sangue da un largo vaso al colo adequata rimessa di sangue primo e durante l' operazione e necessaria. Una anestetica offre alto contenuto di ossigeno con libero passaggio di ossigeno dentro i polmoni e imperativo. Accurati piani per controllo porvisorio dello scorrimento di sangua da un male al vaso, evita una non necessaria perdita di sangue. Eccisione di tessuto danneggiato impedisce in certo modo. Trombosi ed embolismo ad all' arteria pulitura della macchiata

ferita e l' uso della penicillina auita ad evitare infezione ad altre consequense. L' infermo che sostiene una ferita ad una larga arteria, e che dopo sviluppasi in aneurisma al lato della ferita, si offre una maggiore opportunita per lo sviluppo di circolazione collaterale. Questa e grandemente facilitata da intermittente compressione del vaso coinvolto. Corto periodo di compressione sono prolungati sino al punto dove suggettivi sintomi si sviluppano come risulta da continuata occlusione del vaso.

Свод.

Где требуется немедленный контроль кровотечения из большого шейного сосуда, необходимо адэкватное возмещение крови до и во время операции. Анестэтика, дающая высокое кислородное содержание со свободным проходом кислорода в легкие, является обязательной. Заботливая планировка временного контроля кровотечения из поврежденного сосуда предотвратит лишнюю потерю крови. Иссечение поврежденных тканий предотвратит до известной степени тромбоз и эмболизм. Очищение загрязенной раны и пенициллин помогут избежать инфекции и его последствия. Больной, который подвергся повреждению большой артерии и который в последствии имеет аневризму, получает более благоприятную возможность развития коллатерального кровообращения. Это особенно облегчено перерывочной компрессией вовлеченного сосуда. Краткие периоды компрессии удлиняются постепенно до такой точки, когда субъективные симптомы больше не развиваются в результате продолжительной окклюзии сосуда.

BIBLIOGRAPHY

1. Best, C. H., and Taylor, H. B., Physiological Basis of Medical Practice, 4th Ed., Williams & Wilkins Co., Baltimore, p. 795.
2. Fawcett, E., and Blackford, J. V., The Circle of Willis, J. Anat. & Physiol. **40**:65, 1905–1906.
3. Windle, B. C. A., On the Arteries Forming the Circle of Willis, J. Anat. & Physiol. **22**:289, 1887.
4. Dorrance, G. M., Ligations of the Great Vessels of the Neck, Ann. Surg. **99**:721, May, 1934.
5. Homans, J., Accidents and Precautions in Ligation of the Common Carotid Artery, Ann. Surg. **71**:707, June, 1920.
6. Fetterman, J. L., and Pritchard, W. H., Cerebral Complications Following Ligation of the Carotid Artery, J. A. M. A. **112**:1317, Apr. 8, 1939.
7. Dandy, W. E., Results Following Ligation of the Internal Carotid, Arch. Surg. **45**:521, October, 1942.
8. Weiss, S.; Capps, Richard B.; Ferris, Eugene B., and Monroe, Donald, Arch. Int. Med. **58**:407, 1936.
9. Montgomery, A. H., and Ireland, J., Traumatic Segmentary Arterial Spasm, J. A. M. A. **105**:1741, Nov. 30, 1935.
10. Matas, R., Testing the Efficiency of the Collateral Circulation as a Preliminary to the Occlusion of the Great Surgical Arteries, J. A. M. A. **63**:1441, Oct. 24, 1914.
11. Dandy, W. E., Results Following Bands and Ligatures on the Human Internal Carotid Artery, Ann. Surg. **123**:384, March, 1946.
12. Reid, M. R., The Ligation of the Large Arteries, Surg., Gynec. & Obst. **58**:287, February, 1934.
13. Makins, G. H., Gunshot Injuries to the Blood Vessels, Wm. Wood & Co., New York, 1919.

Partial Hepatectomy in Carcinoma of the Gallbladder

With Case Report

MAX THOREK, M.D., F.I.C.S.*
CHICAGO, ILLINOIS

THE first case of carcinoma of the gallbladder was described by Maximilian Stoll of Vienna, in 1777, in a patient with "situs inversus" which made his gallbladder present to the left. The second case was that of Frerich, who referred to it in 1861. Already at that time the relationship of the gallbladder to biliary calculosis was considered.

Ames cites the work of Courvoisier, who found the record of only four cases of carcinoma of the gallbladder published before 1800, namely, the two cases of Stoll (1777), above referred to, one case of Halle (1786) and one of Bayllie (1704). Durand-Fardel in 1840 was the first to give a complete pathologic description of a case of carcinoma limited to the gallbladder, and, from that time on, other cases have been referred to with much greater frequency. Musser, in 1880, reported 49 cases, Courvoisier, in 1890, 103 cases.

Although it has been estimated that there are 6,500 deaths in one year in the United States from primary carcinoma of the gallbladder,[15] this important clinical entity has not received the attention in recent years that has been focused upon many other malignant tumors by the trend toward more radical surgery in carcinoma.

Ranking sixth in frequency of occurrence among carcinomas of the digestive tract and accessory organs,[4] carcinoma of the gallbladder has been seen with increasing frequency at the operating table since the advent of cholecystectomy as the treatment of choice in a large proportion of chronic cholecystitis and cholelithiasis patients. In series of patients whose clinical symptoms of cholecystitis were severe enough to warrant hospitalization, various authors have found the incidence of carcinoma of the gallbladder to range from 5 to 14 per cent.[17] On the basis of such evidence, Graham [10] stated in 1931: "It would seem reasonable to conclude that at least 4 to 5 per cent of women of the cancer age who have stones will develop carcinoma of the gallbladder. This would be much more than the operative mortality rate of 1 to 3 per cent."

Even more striking is the frequency with which gallstones have been found in gallbladders with known primary carcinomas. In 1925, the author reported a series of 11 cases, seen during a 15 year period, in 10 of which calculi were found.[22] This association has been reported by many other observers to occur in between 64 and 100 per cent of all cases and is usually considered to represent the most important factor in the etiology of these tumors.[4, 5, 13]

Incidence of Biliary Calculi in Carcinoma of the Gallbladder

	Per cent		Per cent
Judd and Gray	64	Blumer	90
Musser	69	Fabrus	90
Boyd	80–90	Savy	90
Papin	80–90	Fredmann	92.5
Frerich	82	Ducuing	94
Delle Valle	82	Judd and	
Eurico Bastos	84.6	Baumgartner	94
Courvoisier	88	Siegert	95
Deaver	88	Moynihan	95
Zenker	90	Janowski	100
Thorek	90		

Also suggestive is the fact that primary cholecystic carcinoma occurs in the ratio of about four females to one male, a figure identical with the sex incidence of cholelithiasis.

The exact causative role of gallstones in the production of carcinoma is still undetermined. It is clear that some carcinogenic

* Professor of Surgery, Cook County Graduate School of Medicine.
I wish to thank Dr. Vera Morkovin for her valuable assistance in preparing this manuscript.

agent other than the stones must be present. Among the factors suggested by experimental work are chronic irritation, the presence of specific carcinogenic substances or of radioactivity in certain gallstones,[2] and the role of a high cholesterol concentration. The fact that derivatives of cholic acid are among the most powerful of the chemical carcinogens cannot be overlooked in explaining the frequency of carcinoma of the gallbladder.

Petrov and Krotkina,[18] in 1933, published the results of their work on the experimental production of carcinoma of the gallbladder in animals and concluded that the mechanism of carcinoma formation is not evident. Most probably, the essential reaction consists of secondary degeneration and regeneration of the epithelium, caused by the foreign bodies. It is also possible to postulate a chemical carcinogenic effect in the stagnant bile and its products of decomposition. Factors of hereditary predisposition to cancerous growth also must play a role.

Another comment should be made on the practically incurable nature of cancer of the gallbladder in man. Surgical removal is possible only in rare cases.[14] Radiation therapy is apparently unsuccessful. Therefore, the only available method against this condition is prophylactic cholecystectomy in cholelithiasis, especially in women over 40 years of age. This conclusion was reached by Graham [11] long ago, and he rightly stated that the danger of cancer of the gallbladder in such cases is greater than the operative risk of cholecystectomy uncomplicated by jaundice.

Benign papillomas, though extremely rare, do occur in this viscus, but no definite relationship between these tumors and carcinoma has been demonstrated.

Adenocarcinoma of the gallbladder is seen in three distinct gross pathologic forms which have considerable prognostic significance.[7] The commonest is the *scirrhous* or *infiltrating* type, which may grow as an indurated node or as a diffuse infiltration of the entire gallbladder wall, converting it into a thick pearly hard structure. This may be confused with the changes produced by chronic sclerosing cholecystitis. The tumor often arises from the fundus or the posterior aspect of the neck of the gallbladder and invades the liver by direct extension. Less frequently encountered are the *papillary adenocarcinoma,* a cauliflower-like lesion which tends to bleed easily and the rapidly metastasizing *mucoid carcinoma.*

One of the most interesting neoplasms seen in the body is the rare *squamous cell carcinoma or epithelioma of the gallbladder.* This probably eventuates from a metaplasia of the columnar into squamous cell epithelium due to the chronic irritation preceding the malignant change. These tumors comprised 4.5 per cent of Gray and Sharpe's 243 surgically removed cholecystic carcinomas.[12] Grossly and in clinical behavior, they closely resemble the scirrhous type of adenocarcinoma.

All types of carcinomas of the gallbladder invade the liver by direct extension relatively early in their course, and they may become so large within its substance that they appear to be arising from the liver itself. The cystic and common ducts may also be invaded by direct extension. Metastases may also occur through both blood and lymph channels to other parts of the liver, to regional lymph nodes and to almost any distant organs. Distant metastases are rare, but they do exist; metastases to the vertebral column, the lungs, etc., have been described.

The hepatic chain of lymph nodes is composed of five principal sets: (1) the group of lymph nodes of the hepatic artery; (2) of the gastroduodenal artery; (3) of the right gastro-epiploic artery; (4) of the pyloric and (5) of the duodenopancreatic groups.

Rouvière [20] described the collecting efferent trunks of the coronary, splenic and hepatic lymph chains as separate groups. However, the greater part of these trunks merge, at least near the vicinity of their termination.

The hepatic pedicle contains not only the lymph nodes of the hepatic artery, but also some lymphatic elements, reaching to the extrahepatic biliary tract. One can find these last distributed at all levels, from the neck of the gallbladder to the posterior part of the duodenum, where these lymph nodes become continuous with the posterior duodenopancreatic group of nodes.

There are two sets of biliary vessels and nodes which are almost always constant: (1) the cystic duct node and (2) the node situated at the border of the foramen of Winslow.

(1) The node at the neck of the cystic duct has been known for a long time, having been thoroughly described by Cruikshank. The study of Shimizu [21] showed that this lymph node is very rarely lacking: it is missing in about 6 per cent of cases. It is always single, ovoid and points in the direction of the gallbladder.

(2) The lymph node at the foramen of Winslow (Clermont) is situated in the lesser omentum, on the free edge of the foramen. It is fusiform in shape. It extends upwards and very often to the posterior surface of the duodenum where it sometimes is in contact with

(3) the retroduodenopancreatic lymph node.

The cystic duct node receives part of the superficial and deep lymphatics from the liver, from the gallbladder and from the cystic duct. Its efferents reach the lymph node of the foramen of Winslow and in part also the superior retroduodenopancreatic node.

The node of the foramen of Winslow receives the greater part of the efferent lymphatics from the cystic node, as well as part from the gallbladder, the cystic, hepatic and common bile ducts. Its efferent vessels reach the superior retroduodenopancreatic node, as well as the pre-aortic and right latero-aortic nodes, near the origin of the upper mesenteric artery (Rouvière).

Metastases into the lymph nodes show predilections for the cystic node, the ganglion of Cruikshank or Mascagni and the nodes of the lesser omentum. They may also metastasize to the mediastinal nodes, the tracheobronchial and even the supraclavicular ganglia.

The invasion of the peritoneum surrounding the gallbladder takes place early, but generalized peritoneal carcinogenesis is a late manifestation. Some cases of Krukenberg tumor of primary bile site have been described.

The portal vein may be invaded by the tumor and result in thrombosis. Since carcinoma of the gallbladder is associated with calculi and infections of the walls of the gallbladder, sometimes abscesses and fistulas are formed which may be internal, forming cholecystocolic communications, etc., or open into the free peritoneum with consequent peritonitis; at other times they may be external, opening onto the abdominal wall.

Clinically, the course of this disease is unfortunately characterized by its lack of diagnostic features. About half of the cases give an antecedent history of biliary colic or flatulent dyspepsia. The tumor itself often produces epigastric or right subcostal pain, typically dull and boring, with radiation to the back. The pain tends to progress in severity and may be punctuated with episodes of colic. However, pain is absent in many cases. A palpable mass has been described in at least half of the reported cases, usually hard and tender, but often indistinguishable from liver or colon. Loss of weight is common but rarely extreme. Jaundice may occur on the basis of the pressure of metastases in the lymph nodes in the portal fissure or direct extension of the tumor into the common duct. Jaundice is usually of the obstructive type and, when severe, may implicate the pancreas or extrahepatic bile ducts in the differential diagnosis of the primary tumor. Fever, anorexia, ascites and moderate anemia are inconstant findings. Vomiting, on the basis of pyloric or duodenal obstruction, may occasionally be severe enough to simulate gastric or duodenal pathology. X-ray examination usually reveals a nonfunctioning gallbladder or the presence of stones, but rarely betrays the presence of malignant metamorphosis. Thus the diagnosis remains, as a rule, obscure.

The most widespread pessimism has prevailed in the literature regarding treatment and prognosis of cholecystic carcinoma. The only known prophylaxis is, of course, cholecystectomy performed on every patient with chronic cholecystitis or cholelithiasis unless specific contraindications exist. This point, stressed by Graham, Illingsworth and many others, was recently reiterated by Finney and Johnson.[8] This cannot be emphasized too strongly.

Undoubtedly the largest number of recoveries have been obtained in cholecystectomies performed where the neoplasm was small and discovered early. In patients where exploration has been advised on a clinical suspicion of malignancy, the recorded results are exceedingly discouraging. Cooper [6] reported an immediate operative mortality of 38 per

cent from exploration and biopsy alone, and an immediate mortality of 25 per cent where cholecystectomy was done. Of the surviving 13 cases in his series of 48, the average duration of life was 13½ months with one possible cure. Blalock,[3] in 1924, felt that any operation would hasten the progress of the disease if hepatic involvement were present. It is the prevailing opinion, according to Bockus,[4] that cholecystectomy should be done in these cases if at all feasible, because "occasional cures are on record." Five year survivals have been noted in four cases of Judd and Baumgartner [14] and in seven of Magoun and Renshaw.[16] But in surveying the literature Bockus concludes that a cure may not be expected in more than one of 40 patients who survive the operation.

It is our impression that simple cholecystectomy may not be the most radical operation possible in these cases. In 1932, Finsterer [9] described the resection of a contiguous portion of liver with a malignant tumor of the gallbladder and obtained the only cure in his series of 46 cases. Two years later, Gray [11] successfully performed partial hepatectomy with cholecystectomy on a squamous cell carcinoma with extension into the liver, very similar to the case we shall describe. Since then, Aiga and Hochberg and Kogut have also attempted wider liver resections.

We have recently had the opportunity of performing an operation which illustrated one of the unusual pathologic variations of gallbladder neoplasm, and which demonstrated the occasional resectability of even extensive tumors, as well as some of the pitfalls in their diagnosis.

CASE REPORT

Mrs. A. G., a white housewife, 68, entered the American Hospital on Oct. 18, 1946, apparently symptom-free. She had called her physician on the preceding day because of a sudden brief attack of paresthesia and weakness in both legs. By the time he arrived these complaints had subsided and did not recur. However, during his examination he noted the presence of an abdominal mass and advised hospitalization. Close and repeated questioning elicited the information that the patient had been gradually losing about 40 lb. of weight during the past two or three years with no associated weakness. For about two months she had noted slight "fulness" and discomfort in the right upper abdominal quadrant, which she attributed to gas, and she had begun to have frequent attacks of vomiting at irregular intervals. Some diarrhea was noted the week preceding admission. She had no anorexia or pain and was not conscious of the pressure of a mass. She was active and comfortable while in the hospital.

Her past history was negative for symptoms of cholecystitis or previous serious illness. The systemic inventory disclosed the history of pelvic surgery 25 years ago and frequent "asthmatic attacks" occurring during the spring for several seasons.

Physical examination revealed an alert patient who betrayed evidence of recent loss of weight. Occasional expiratory wheezes were heard on auscultation of the chest. A blowing systolic murmur was heard over the apex. The heart borders were within normal limits. The abdominal musculature was relaxed and an old Pfannenstiel scar was present below the level of the umbilicus. With the patient supine, a large round swelling was conspicuous in the right upper abdominal quadrant. On palpation this proved to be a circumscribed, grapefruit-sized, firm, nontender mass lying anteriorly, just under the abdominal wall. It moved quite freely with respiration and did not seem attached to any definite structure. Saphenous varicosities were present in both lower legs.

Blood pressure was 160/80. Temperature was 99.4 on admission and ranged between 99 and 100.2 F. orally during the preoperative period. Pulse and respiration were within normal limits.

The erythrocyte count was 4,150,000, the hemoglobin, 58 per cent. The leukocyte count was 14,800, of which 70 per cent were polymorphonuclears, 22 per cent lymphocytes, 2 per cent monocytes and 6 per cent eosinophils. The urine had a specific gravity of 1.020 and was negative for sugar, albumin, bile and cells. The nonprotein nitrogen level of the blood was 29 mg. per 100 cc. The stools contained no occult blood.

X-ray examination revealed failure of visualization of the gallbladder and decreased mobility of the right cupola of the diaphragm. Barium studies demonstrated that the stomach was displaced toward the left and the hepatic flexure downward, apparently by an extrinsic mass (Figs. 1 and 2). Intravenous urography revealed moderate dilatation of the right kidney pelvis and calyces, apparently due to external pressure.

Among the diagnoses entertained preoperatively were: *tumor or cyst of the liver, mesenteric cyst or retroperitoneal tumor.*

In preparation for surgery, the patient received

a high caloric, high protein diet, vitamin K, blood transfusions and sulfasuccidine prophylactically in case the tumor should involve the colon.

The patient was operated on on October 26, 1946, under pontocaine spinal analgesia. On right rectus incision a large mass immediately presented, entirely covered by adherent omentum and loops of small bowel. When these were dissected free, the mass appeared spherical, pearly gray, firm but cystic in consistency, and seemed to arise from the liver. About half projected below the liver edge, with the gallbladder (also hard and pearly gray) fused to its under surface and apparently continuous with it. Gross diagnosis at the operating table was *primary carcinoma or cyst of the liver.*

The mass compressed the first portion of the duodenum, to which it was firmly adherent. No metastases could be found in any other portion of the liver, lymph nodes or other accessible abdominal structures. In dissecting the mass from the dense maze of adhesions the duodenum was inadvertently opened; the defect was immediately closed with fine cotton sutures. After division and ligation of the cystic duct and artery, the entire neoplasm was excised *en masse* from the right lobe of the liver. No cleavage plane presented, but a layer of normal liver substance about 1 cm. thick was removed with the mass.

Hemostasis was obtained by clamping and ligating large vessels, electrocoagulation of part of the raw liver surfaces and the approximation of these surfaces with deep through-and-through mattress sutures of catgut on large, blunt Kousnetzoff's liver needles. A prophylactic hemostatic strip of gauze was placed over the operative field, supplemented by a cigarette drain in Morison's pouch.

In all, a wedge of tissue, including the tumor mass, was removed, which appeared to have occupied about *one fourth the volume of the liver.* The abdominal wall was closed in layers with cotton sutures.

Pathologic findings: After removal, the tumor measured 15 cm. in diameter and appeared as a light yellow gray, ovoid mass, having a soft, caseous center. It was closely integrated with the adjacent liver parenchyma. A thick-walled sac, whose lumen communicated with the caseous excavation in the center of the large tumor, was fused to the under surface of the neoplasm, which appeared to be the gallbladder (Figs. 3 and 4). No calculi were found.

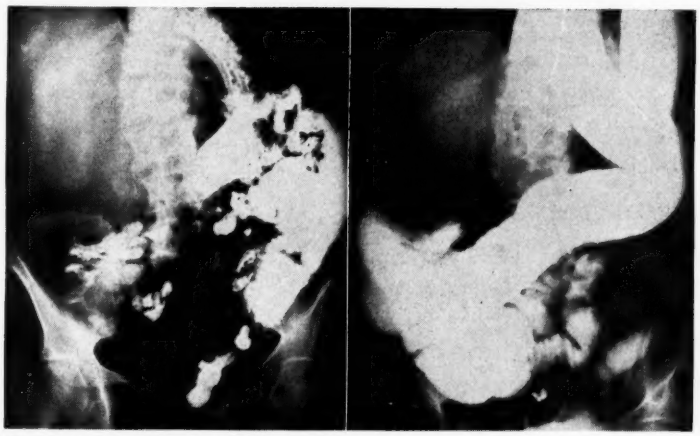


Fig. 1 *(left).*—Fig. 2 *(right).*—Large tumor mass in right hypochondrium, displacing stomach, duodenum and right half of colon.

The histologic report by the pathologist (Dr. B. Neiman) stated:

"Microscopic sections were taken through various areas from the large mass. These display many areas of necrosis in the central portions of the neoplasm. In better preserved areas the tumor is composed of large polygonal cells. The nuclei are often hyperchromatic and irregular. They are arranged in cords and have a superficial resemblance to hepatic cells. Here and there the cells are swollen with a clear cytoplasm, and hornification is seen. Between these two groups of cells a moderate amount of stroma is apparent (Figs. 5 and 6). Sections near the distal end of the gallbladder reveal some areas in which its high columnar epithelium is still preserved.

Sections taken where the tumor mass begins show a sudden transition into a squamous cell

type of epithelium (Fig. 7). This epithelium is stratified, and the cells piled up to fill almost the entire lumen of the gallbladder. The tumor mass then invades the liver and compresses the liver parenchyma."

Pathologic diagnosis: *Primary squamous cell carcinoma of the gallbladder invading the liver.*

Postoperatively, the patient received blood, fluids, vitamin K and a high glucose intake. The immediate postoperative course was entirely uneventful, and she was discharged from the hospital on the fifteenth day. Three weeks after the operation she developed a mild jaundice. The icterus index reached 28 units, the urine contained bile but no urobilinogen, and the stools were clay-colored for about one week. During this time she was ambulatory and symptomless. The jaundice disappeared in about eight days. When seen eight months after operation, she had gained about 35 lb., was able to partake of a full, unrestricted diet and had no complaints; jaundice had completely disappeared.

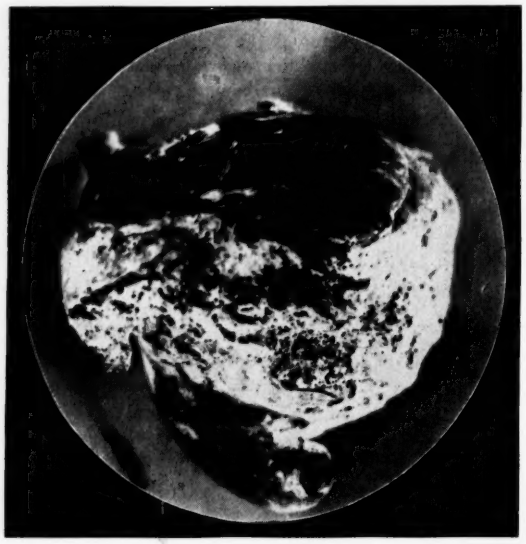


Fig. 3 *(left)*

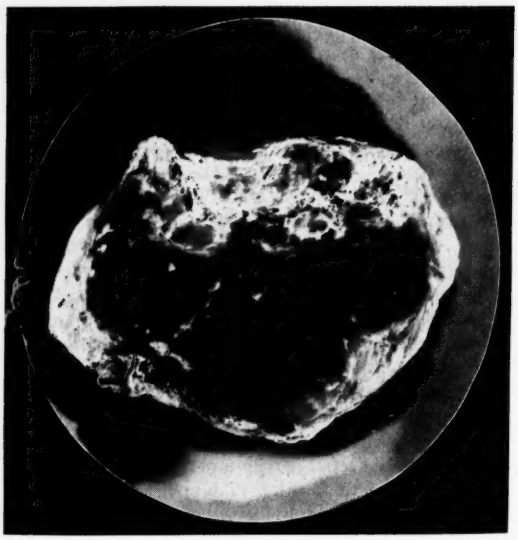


Fig. 4 *(right)*

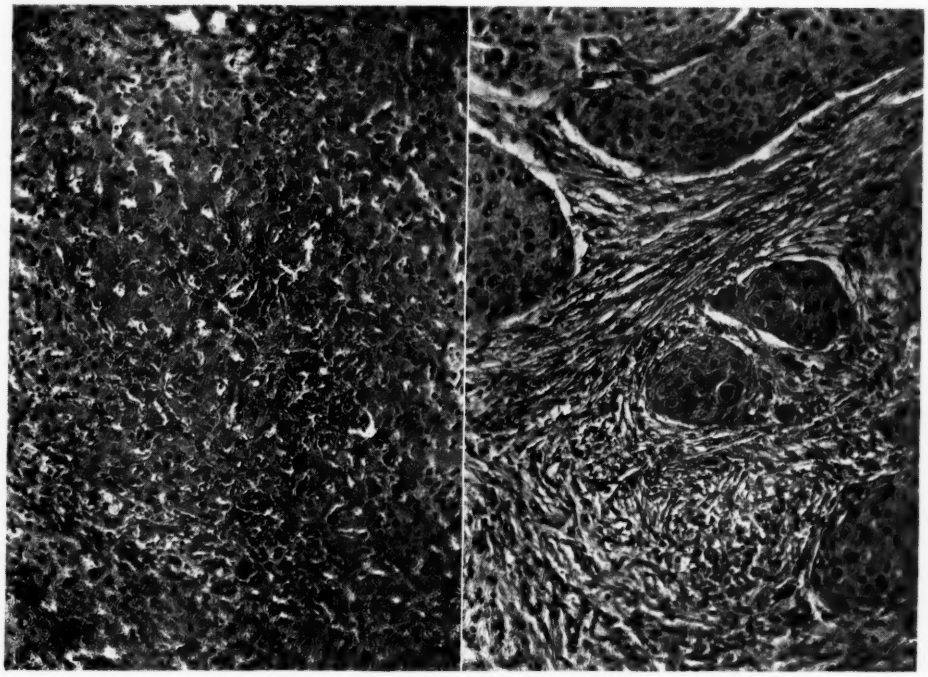


Fig. 5 *(left)*.—Large polygonal tumor cells arranged in cords somewhat resembling hepatic structure.
Fig. 6 *(right)*.—Islands of tumor tissue separated by fibrous stroma.

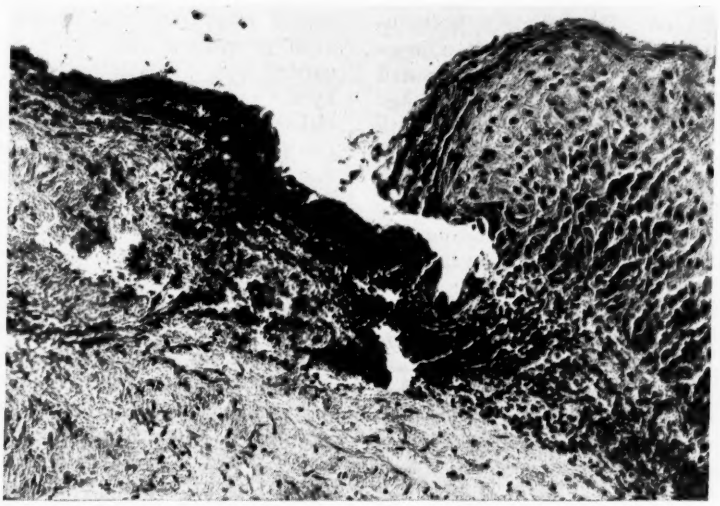


Fig. 7.—Section through gallbladder wall, showing change from normal mucosa to squamous cell carcinoma.

DISCUSSION

1. This case illustrates the difficult diagnostic problem posed by the presence of a right upper quadrant abdominal mass which causes no pain or jaundice. In our case there was no history of previous cholecystitis or other symptoms causing the slightest suspicion of the true state of affairs, but it emphasizes clearly why so few of these cases are diagnosed preoperatively.

2. The two year history of gradual loss of weight as well as the general excellent condition of our patient on admission in the presence of such an extensive tumor are interpreted by us as indicating that we were dealing with a slow-growing neoplasm of relatively low grade malignancy (there were no demonstrable metastases in the accessible lymph nodes). This is further supported by the age of the patient, the apparent absence of metastases and by the pathologic finding of hornification, indicating a fairly well differentiated growth. The mass apparently gave no symptoms until it began to compress the duodenum.

From a survey of the literature one gains the gloomy impression that all such tumors (whether adeno- or squamous cell carcinomas) are hopeless neoplastic entities, and we recall Blalock's pessimistic outlook in 1924 in case of liver involvement. In this fatalistic attitude Blalock is not alone. Fortunately, accumulated studies in recent years permit a more hopeful outlook. Cases of well differentiated carcinoma of the gallbladder have been successfully treated by surgery, and we can with good conscience alter our outlook to a more favorable one, or a better prognosis.

3. In our case and probably in many other cases of gallbladder carcinoma extending into the liver, the actual problem confronting the surgeon was how to deal with a large tumor of the liver. The fact that it arose from the gallbladder (unrecognized in the operating room) did not influence the decision to resect it *en masse*. The results suggest the fact that a primary malignancy of the gallbladder which has already invaded the liver substance is no reason for hesitancy; on the contrary, it is a distinct and clearcut indication for radical surgical attack.

In view of the increased safety of surgery of the liver when patients are properly prepared (glucose, proteins, fluids, blood and vitamin K), it is our belief that a solitary discrete tumor of the liver should be resected. The problem here is not any different than dealing with any other discrete tumor of the gastro-intestinal tract, if the situation of the neoplasm and the condition of the patient make resection feasible. Direct extension into an adjacent viscus, or in other locations, does not contraindicate resection, provided a part or all of the adjacently affected organ can be removed without endangering life (e.g., the modern surgeon does not hesitate to remove a uterus secondarily invaded by a carcinoma of the rectum or a portion of the urinary bladder).

The operation of partial hepatectomy is not new, 63 successful cases having been reported by Keen in 1899.[23] Kousnetzoff's technic, introduced in 1896, of placing deep sutures with blunt needles before resecting the wedge of liver tissue is a practical procedure. Supplemented by modern use of electrocoagulation or the newer hemostatic agents such as fibrin foam and gelatin sponge, it can be employed with confidence.

The liver has tremendous regenerative powers (four fifths of the liver can be removed in animals with complete regeneration in six to eight weeks). Its excellent blood supply may even permit more extensive surgical procedures than have previously been carried out. This latter point is borne out by the experiments of Martens, showing that either lobe of the liver can survive if only one branch of the hepatic artery is divided (quoted by Warvi).[23]

4. Two principles have served as beacons in the recent progress in cancer surgery: one is the necessity of the widest possible resection if cures are to be expected; the other is the value of removing primary lesions, even in the presence of metastases, because of the apparent inhibiting effect this has upon secondary growths. We do not believe that these principles can be disregarded, even when the growth involves the liver. We therefore suspect that further investigation and case reports may soon point to the desirability of partial hepatectomy, even in early carcinomas of the gallbladder before extension into the liver has occurred.

5. In order to eliminate one definite etiologic factor, it is wise to resort to early cholecystectomy in all patients with gallstones. The incidence of carcinoma in these cases is undoubtedly considerably higher than the mortality of cholecystectomy at the present time. This fact, we believe, justifies surgery even in the asymptomatic calculous gallbladders.

SUMMARY

1. The etiologic and clinical features of primary carcinoma of the gallbladder are briefly reviewed.

2. A case of primary squamous cell carcinoma of the gallbladder extending into the liver is presented.

3. The present trends in surgery of liver and gallbladder neoplasms are discussed.

4. More extended prophylactic cholecystectomy is stressed.

RÉSUMÉ

1. Une revue brève de l'étiologie et de l'évolution clinique du carcinome primaire de la vésicule biliaire est presentée.

2. Un cas de carcinome primaire, formé de cellules squameuses de la vésicule biliaire rapporté par l'auteur. Le carcinome avait envahi le foie par extension.

3. L'évolution actuelle des la chirurgie des néoplasmes du foie et de la vésicule biliaire est discutée.

4. La cholécystectomie prophylactique plus étendue est recommandée.

SOMMARIO

1. I segni etiologici e clinici del carcinoma iniziale del fiele vengono brevemente passati in rassegna.

2. Viene presentato un caso iniziale di carcinoma squamoso cellulare del fiele che si estende nel fegato.

3. Viene discusso il costume presente nella chirurgia del neoplasma del fegato e del fiele.

4. Si insiste di rimuovere il fiele pui spesso.

SUMARIO

1. Se revistan brevemente las características etiológicas y clínicas del carcinoma primaria de la vesícula biliar.

2. Se presenta un caso de carcinoma de célula escamosa de la vesícula biliar que se extiende en el interior del hígado.

3. Se discuten las actuales tendencias en cirugía de hígado y de neoplasmas vesículo biliares.

4. Se pone de relieve una más extendida colecistomía profiláctica.

Свод.

1. Сделано краткое обозрение этиологических и клинических факторов первичного рака желчного пузыря.

2. Доложен случай первичного сквомозноклеточного рака желчного пузыря с вовлечением печени.

3. Разобраны теперешние тенденции хирургии опухолей печени и желчного пузыря.

4. Подчеркнута необходимость более широкой профилактической холецистэктомии.

BIBLIOGRAPHY

1. Aiga, Y., Uber einen seltenen Fall von operativ dauernd geheiltem Gallenblasenkarzinom, Zentralbl. f. Chir. **62**:212–215, 1935.
2. Lazarus-Barlow, W. S., An Attempt at the Experimental Production of Carcinoma by Radium, Proc. Roy. Soc., London, sec. Path. **11**:1–17, 1918.
3. Blalock, A., Statistical Study of 888 Cases of Biliary Tract Disease, Bull. Johns Hopkins Hosp. **35**:391, 1924.
4. Bockus, H. L., Gastro-Enterology, W. B. Saunders Co., Phila., 1946.
5. Boyce, F. L., and McFettridge, E. M., Carcinoma of the Gallbladder, Critique Based on Analysis of 25 Cases from Charity Hospital in New Orleans, Internat. Surg. Digest **21**:67, 1936.
6. Cooper, W. R., Carcinoma of Gallbladder, Arch. Surg. **35**:431, 1937.
7. Ewing, J., Neoplastic Diseases, 4th ed., W. B. Saunders Co., Phila., 1942.
8. Finney, J. M. T., Jr., and Johnson, M. L., Primary Carcinoma of the Gallbladder: an Additional Reason for Removing the Calculous Gallbladder, Ann. Surg. **121**:425, 1945.
9. Finsterer, H., Das Karzinom der Gallenblase, Med. Klin. **28**:432, 1932.
10. Graham, E. A., Prevention of Carcinoma of Gallbladder, Ann. Surg. **93**:317, 1931.
11. Gray, H. K., Squamous Cell Epithelioma of Gallbladder and Liver, Cholecystectomy and Partial Hepatectomy; Report of Case, Surg. Clin. North America **14**:717, 1934.
12. Gray, H. K., and Sharpe, W. S., Carcinoma of Gallbladder, Extrahepatic Bile Ducts and Major Duodenal Papilla, Surg. Clin. North America **21**:1117, 1941.
13. Illingsworth, C. F. W., Carcinoma of the Gallbladder, Brit. J. Surg. **23**:4, 1935.
14. Judd, E. S., and Baumgartner, C. J., Malignant Lesions of Gallbladder, Arch. Int. Med. **44**:735, 1929.
15. Lam, C. R., Present Status of Carcinoma of Gallbladder; Study of 34 Clinical Cases, Ann. Surg. **111**:403, 1940.
16. Magoun, J., and Renshaw, K., Malignant Neoplasms in Gallbladder, Ann. Surg. **74**:700, 1921.
17. Maingot, Rodney, Abdominal Operations, D. Appleton-Century Co., London, 1940.
18. Petrov, N. N., and Krotkina, N. A., Experimental Carcinoma of the Gallbladder, Ann. Surg. **125**:241–247, 1947.
19. Rolleston, H., and McNee, J. W., Diseases of the Liver, Gallbladder and Bile Ducts, Macmillan Company, New York.
20. Rouvière, H., Anatomie des lymphatiques de l'homme, Paris, 1932.
21. Shimizu, S., Sur le ganglion cystique, Folia anat. Japonica **9**:79–80, 1931.
22. Thorek, Max, Undici casi di carcinoma primitivo della cistifellea, Rassegna Internaz. di clin. e terap. **6**:no. 2, 1925.
23. Warvi, W. N., Primary Tumors of tthe Liver, Surg., Gynec. & Obst. **80**:643, 1945.

Common Bile Duct: Anatomy, Physiology and Surgery*

MOSES BEHREND, M.D., F.I.C.S.†
AND
ALBERT BEHREND, M.D., F.I.C.S.‡
PHILADELPHIA

ANATOMY

THE normal anatomy of the common bile duct should present no hardship for the surgeon. The common bile duct is a tubular structure, about 5 mm. in diameter, covered by peritoneum lying above the foramen of Winslow. Its length varies, depending upon the point of insertion of the cystic duct. The cystic duct may insert into the hepatic duct near the duodenum or directly in the center, dividing the bile duct into hepatic and common ducts of equal length. When the cystic duct inserts near the liver, the common bile duct will be of considerable length. When the cystic duct inserts near the duodenum, the common bile duct may not be longer than ½–¾ in., but the most important anatomic fact is that the cystic duct normally forms a "T" at its insertion into the hepatic duct. If this insertion is central, an almost perfect "T" is formed; if the insertion is near the duodenum or the liver, the arm of the cystic duct makes an irregular "T" as result of its insertion.

Another important observation (Michels) is the never failing cystic triangle which is formed by the common duct, cystic duct and cystic artery. This invariably appears in every dissection, irrespective of the character and formation of the anatomic arrangements of the ducts and blood vessels. To contribute to the avoidance of injuring the common duct, dissection on the cadaver should be done to study the normal and the abnormal anatomy. The variations of the common bile duct are not as great as those found in the cystic duct, the hepatic and cystic arteries. The relations at the insertion of the common duct into the papilla of Vater are variable. There may be an individual insertion or a common insertion of the common bile duct and pancreatic ducts. These variations are mainly of interest for the research anatomist, because they have very little bearing upon the character of operation to be performed on the ducts.

PHYSIOLOGY

Without a properly functioning common duct life is short. Whether absence of the common duct be due to congenital deficiencies, disease or accidents resulting from operation, the end-result will be the same, namely, death. The duct serves a purpose so extraordinary in the delivery of essential fluids to the digestive tract and the deliverance of bile and other chemical constituents from the liver to the intestine, that its importance must always be borne in mind while performing a cholecystectomy. There is no doubt that the repeated episodes of acute and chronic inflammation characteristic of gallbladder disease cause distortions in the common bile duct which result in altered physiology. In some cases the inflammatory reaction causes a fusion of the common bile duct with the gallbladder. In other instances adhesions may bind the cystic duct and the common duct with resultant distortion of the structures. Undoubtedly many of the accidents occurring to the common duct at operation are caused by the apparent fusion of the common and cystic ducts. The finest dissection of the structures lying within the folds of the gastrohepatic omentum is required in these cases. The importance of proper exposure of this strategic area is great, and no surgeon should proceed with operation upon the bile ducts until he has satisfied himself that he is able to obtain it in each case. Occasionally the common bile duct assumes such a large diameter that it may appear to be an additional gallbladder. Very seldom the dilatation of the common duct assumes the

* Read before the Eleventh National Assembly, United States Chapter, International College of Surgeons, Detroit, Michigan, October, 1946.
† Consulting Surgeon, Jewish Hospital and Mt. Sinai Hospital.
‡ Attending Surgeon, Jewish Hospital and Mt. Sinai Hospital.

form of a cystic structure. In a case recently operated upon, we removed 32 gallstones from a huge common duct, and although the patient had had symptoms of gallbladder disease for many years, jaundice was never present. The stones were all of large size and multifaceted, and such a case can be compared with interest to the more usual case of common duct obstruction caused by a single stone only a few millimeters in diameter lodged at the ampulla of Vater.

Great changes in the physiology of the liver are brought about by obstruction to the flow of bile, whether this be due to stones, stricture or other abnormalities. There can be little doubt that stones are formed in the common duct either before or after the gallbladder has been removed. Any dysfunction of the sphincter of Oddi furthermore predisposes to the formation of stones in the common duct. Such disturbances in function are found in biliary dyskinesia, which is occasionally seen as a post-cholecystectomy syndrome, or in cases of chronic pancreatitis. Jaundice is a condition which produces irreversible changes in the physiology of the liver if not corrected promptly. It is therefore important that the cause of jaundice be determined as soon as possible, and for this the history, physical examination and laboratory tests, including x-rays, are all of value. In some instances however, the problem is far from simple, and lately we have encountered a number of cases in which the differential diagnosis between infectious hepatitis and common duct obstruction due to stones was very difficult. In many cases, infectious hepatitis is accompanied by severe pain in the right upper quadrant, which of course is also frequently seen with stone in the common duct; so far there is no definitive laboratory test or tests which will differentiate the two conditions absolutely.

SURGERY OF THE COMMON DUCT

It appears that the number of cases of stricture of the common duct directly traceable to accidents occurring during cholecystectomy and operations on the common duct have increased in recent years. In part, this increase may be attributable to the published writings of some of our leading surgeons who advocate exploration of the common duct in a high percentage of cases operated upon for gallbladder disease. There is no doubt that the common duct should be explored in the presence of jaundice, past or present at the time of operation, and in cases where the common duct is dilated. We do not feel that every case that requires cholecystectomy should have common duct exploration. A surgeon who is not thoroughly familiar with the anatomy of the cystic triangle will undoubtedly cause more harm than benefit by injudicious attempts to explore the common duct routinely. This emphasizes once more the importance of knowing how to expose the structures which are so strategically located in the right free border of the gastrohepatic omentum. Once these structures are properly exposed, the surgeon need never fear the slipping of a hemostat or ligature from a cystic duct or cystic artery, for well exposed they may be readily picked up without danger to adjacent structures, such as the common duct and hepatic artery.

In the surgery of the common duct one must be equipped to perform operations that require end-to-end anastomosis of this structure or an anastomosis of the common duct to the hollow viscera. Accidental severance of the common duct when performing a cholecystectomy requires immediate end-to-end anastomosis over a rubber T tube. Occasionally this accident is not recognized at the time of primary operation, and indeed is not appreciated until jaundice occurs a day or two following operation. These cases should be operated upon promptly and an anastomosis carried out between the divided common or hepatic ducts and the stomach, duodenum or jejunum. A direct anastomosis of these structures is the most desirable type of operation and may be performed over a straight rubber tube or a T tube. It is better, if possible, to avoid the use of tubes in this type of operation. The use of the vitallium tube has never appealed to us, in view of the frequent reports of blockage of the tubes and the necessity for reoperation. We view with some concern the use of an unyielding metal tube in this vital area, for we have had one instance in which even a rubber tube placed in the common duct

for several months resulted in erosion of the hepatic artery with profuse hemorrhage and death. In several cases, Walters has implanted the drainage tract from an external biliary fistula into the duodenum, but these operations have been far from uniformly successful because of subsequent scar tissue formation and occlusion of the tract. While considerable research is being carried out in various experimental centers in an effort to find the best substitute for a destroyed common duct, no method yet devised appears to be completely satisfactory, and the problem remains one of the most troublesome with which the surgeon has to deal.

Operations upon the common duct are also required when tumors cause obstruction at its outlet. These tumors commonly arise in the papilla of Vater and the head of the pancreas. Operations are of two types, namely, palliative and radical resection of the tumor. In some cases it is impossible for the surgeon to determine whether he is dealing with a condition of chronic pancreatitis causing obstruction of the common duct or a carcinoma. We feel that biopsy of the pancreas in these cases is as important as biopsy of a breast tumor. The radical operation for resection of the head of the pancreas is a grave and hazardous one, while the palliative or short-circuiting operation is relatively simple. When a palliative operation is performed, we believe that it is most desirable to join the common duct to the duodenum by an en-to-side or lateral anastomosis. When a radical operation is necessary, we prefer the one stage type of resection of the head of the pancreas, duodenum and tumor-bearing area by the method recently described by one of us (M. B.).

SUMMARY

1. The importance of knowledge of the anatomy of the structures comprising the cystic triangle is shown repeatedly and reemphasized. The structures in this area must always be properly exposed to permit a satisfactory operation.

2. The importance of the bile in producing normal digestive function is stressed.

3. The surgical means of reestablishing such normal function are discussed.

RÉSUMÉ

Avec emphase et répétition, l'importance de connaître l'anatomie des structures qui entre dans la formation du triangle cystique, nous est signalée. Pour permettre une opération satisfaisante, il importe de bien mettre à jour les éléments du triangle cystique.

2. L'importance de la bile pour produire une digestion normale est démontrée avec emphase.

3. Les procédés chirurgicaux pour rétablir les fonctions des conduits biliaires sont énumérés et discutés.

SUMARIO

1. Se muestra repetidamente y se pone de relieve la importancia del conocimiento de la anatomía de las estructuras que comprenden el triángulo cístico. Las estructuras en esta región deben exponerse propiamente para de modo que permitan una operación satisfactoria.

2. Se da importancia al interés que tiene la bilis en la creación de una digestión normal.

3. Se comentan los procedimientos quirúrgicos para el restablecimienta tales funciones normales.

SOMMARIO

1. L' importanza di conoscenza della anatomia della struttura compresa il triangolo cistico, si vede ripetutamente in continuo. Le strotture in questo posto deve sempre essere guisto esposto per permettere una saddisfacente operazione.

2. L' importanza della bile nel produrre normale funzione digestiva e insistita.

3. Il modo chirurgico nel ristabilire la funsione normale e discussa.

Свод.

1. Повторно показана и подчеркнута необходимость знания анатомии структур, составляющих пузырный треугольник. Удовлетворительная операция требует полной экспозиции этой области.

2. Обращено внимание на важность желчи для нормальной пищеварительной функции.

3. Разобраны хирургические способы восстановления такой нормальной функции.

Plastic Operation for Harelip Profile

A. RÉTHI, M.D., F.I.C.S.*
BUDAPEST, HUNGARY

WHEN operating on a harelip, the individual tissue layers must be united in their anatomic order. To obtain this, attention must be paid to the labial muscles, structures which were formerly neglected. Harelip is a congenital fissure due to failure of intra-uterine union, by which only a cleft is present without loss of tissue substance. Therefore, good cosmetic results can be obtained by forming a proper wound edge and anatomic union of the layers, without using lateral incisions leading to distorting scars. It must be emphasized that even the smallest amount of tissue present may be important for the plastic operation. A successful operation results in a lip which, apart from being symmetric, has a thickness and width along the filtrum fully harmonizing with the face.

Former operations, often with faulty technic, not infrequently resulted in a marked harelip profile, manifesting itself by a projecting lower lip with the upper lip vertically prolonged and thinned out. The rubor was narrow and inverted. The marginal part of such an upper lip is, to a certain extent, stretched and thus is pushed back of the lower lip, enhancing its distorted appearance (pseudoprogenia). If it is realized that most such cases are associated with a protruding, curved nose, whereby the retracted position of the upper lip is still more emphasized, a correct image of the so-called harelip profile is obtained.

Naturally, absence of the upper teeth or their faulty positioning may be additional distorting factors; the distortion cannot, however, be corrected by readjustments of the teeth alone.

In some instances atrophy or deficiency of the os intermaxillare may account for the backward shift of the whole lip. Since there is no lack of soft parts, such cases can be corrected by inserting a dental prosthesis to create proper protrusion of the upper lip.

However, in cases with considerable reduction of the soft tissues of the upper lip, the latter must be corrected. To replace large tissue deficiencies, especially those attended by cicatrization, Abbe's plastic operation has been suggested. This consists of implantation of a part of the lower lip, including the rubor, into the upper lip as a pedunculated graft. In cases of widespread cicatrization, Lexer removes the upper lip and takes the grafts in male patients from the skin of the head, in female patients from the arm.

As stated, the essential feature of harelip profile is the alteration of the upper lip associated, in most cases, with a curved nose. Thus there are two features to be corrected, the upper lip and the nose. It must be reemphasized that the deformity of the upper lip is the sequel to its prolongation along the filtrum, and the insufficiency of its soft parts, producing a thin upper lip. Rubor is hardly visible. The aim of the operation is, therefore, to abbreviate the upper lip and to render it thicker, especially its inferior half. Some authors have reported cases in which abbreviation was obtained by removing a piece of the upper lip lying directly below the nose. The results, however, were not satisfactory.

My procedure consists partly of the correction of the nose (Figs. 1–8); this part of the technic will be reported later. Correction of the upper lip is done by reduplication, whereby the upper lip becomes shorter, thicker and projects over the lower lip. A rubor of correct width is formed by the contiguous mucous membrane. Thus the lower lip no

* From the Rhinolaryngologic Department, St. Rochus Hospital, Budapest.

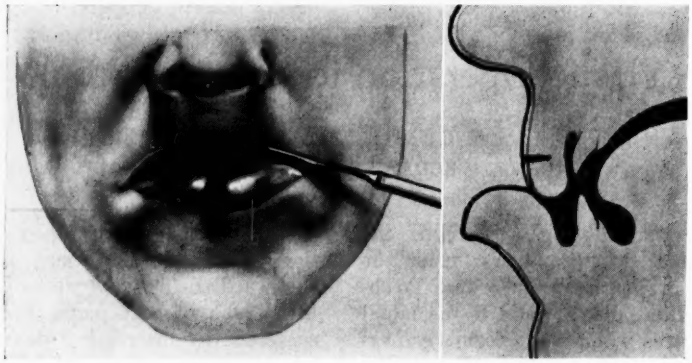


Fig. 1.—Skin incision starting above one end of mouth and running, in a curve, to the other. Depth of incision as seen from lateral view of sagittal section. It involves two thirds of the whole thickness of the upper lip.

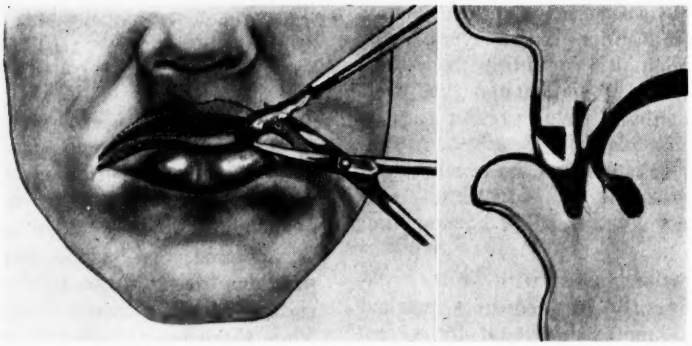


Fig. 2.—Sagittal section; a second incision is made, starting from the deepest point of the first vertically down parallel to posterior aspect of lip. This incision should approximate the rubor. A third incision forming the hypothenuse of right triangle is made to remove triangular strip of upper lip. This strip is not removed if tissue must be saved.

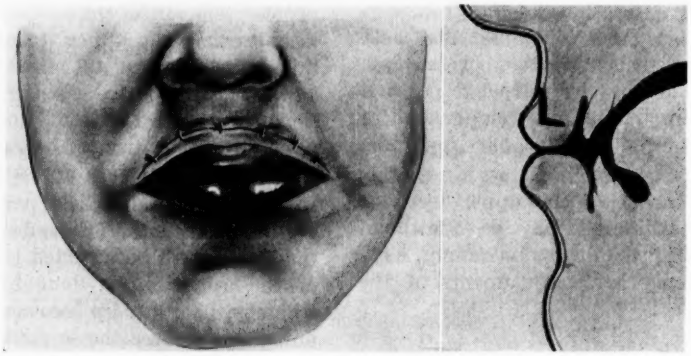


Fig. 3.—Part of upper lip below incision is folded upward to embrace the part of upper lip above incision.

longer protrudes over the upper, and the profile is remarably improved.

TECHNIC

Under local anesthesia the incision, done with a very fine plastic scalpel, is started 1 mm. above, and medially to, one angulus oris and passed in an arc to the corresponding point on the other side. At the filtrum, the incision continues 6–12 mm. away from the rubor. This incision must be deep enough to sever two thirds of the whole thickness of the upper lip. The second incision is started vertically downward from the deepest point of the first one, parallel to the posterior aspect of the lip; this incision approximates the rubor. The third incision is run along an imaginary line, forming the third side of the triangle. Thus a triangular strip has been removed from the upper lip. Then the portion lying below the incision is folded upward, so that it embraces the part lying above the first incision. If the inferior portion of the upper lip is to be sutured in this position, the intact skin covered by it must naturally be removed, at least to some small degree. After this is done, there is an upper wound edge, the skin of which should be cut off, 1–2 mm. wide, in order to secure accurate union with the inferior part. To obtain a "Cupid's bow" effect as well, the superior skin incision should be made to decline at the filtrum, thus producing a ridge, unlike the inferior one which runs along in a perfect arc. Then a "Cupid's bow" is created by uniting the wound edges. Prior to suturing the skin, the soft parts should be united by some buried stitches with no. 000 catgut.

Fig. 4 *(left)*.—Marked harelip profile. Large, curved, projecting nose. Upper lip falling backward, while lower lip protrudes. Fig. 5 *(right)*.—Same case, anterior view. Spots on face due to faulty photographic technic.

Fig. 6.—Same case. Nose deformity corrected; upper lip not yet operated on.

Fig. 7 *(left)*.—Same case. Results after operation. Fig. 8 *(right)*.—Front view after operation.

During the operation, a triangular piece of skin is usually removed from the upper lip. Its removal is not always necessary, especially if the lip is too thin; it may be used as an additional factor to the projection of the inferior margin of the upper lip. Therefore it is best to perform the first and second incisions only and, before attempting the third incision (the one overbridging the rectangle), to test whether the soft parts can be mobilized and used for thickening the lip without it.

By this technic the following results are obtained: The inferior margin of the upper lip does, having become thicker, project; the rubor together with the mucosa is of proper width; the pattern of the "Cupid's bow" is conspicuous; the upper lip is correctly shaped and projects over the lower, and the lower lip is normal. The scar of the incision will, if horsehair is used for the sutures, soon be hardly visible.

The horsehair sutures should be removed after 48 hours; before removal, the wound is secured by placing a collodium gauze strip on the interspaces between two sutures and permitting it to dry.

SUMMARY

Harelip profile characterized by projection of the lower lip over the upper lip is caused by faulty union. The author reports his technic by which the upper lip is made thick enough to protrude properly over the lower lip, thus rendering the profile more normal.

SOMMAIRE

Le profil du bec-de-lièvre est caractérisé par la projection de la lèvre inférieure sur la lèvre supérieure. Cette difformité résulte d'une union fautive. L'auteur décrit une technique qui épaissèt suffisamment la lèvre supérieure, pour qu'elle fasse saillie légèrement sur la lèvre inférieure. Cette opération rend le profil plus normal.

SOMMARIO

Il profilo del labbor fesso caratterizzato di proezione del labbro baso sopra del labbro superiore, e causato da incorretta unione. L' autore riporta la sua tecnica di cui il labbro superiore e fatto grosso sufficiente da spingere avanti sopra il labbro basso, cosi da rendere il profilo piu normale.

SUMARIO

El contorno de labio leporino caracterizado por la proyección del labio inferior sobre el labio superior es causado por la unión defectuosa. El autor informa sobre su técnica por medio de la cual el labio superior se engruesa lo bastante para cubrir propiamente el labio inferior, devolviendo al perfil su normalidad.

Свод.

Заячегубный профиль, характеризуемый тем, что нижняя губа выступает больше чем верхняя губа, является результатом плохого сростания. Автор докладывает свою методику, при помощи которой верхняя губа утолщается достаточно для выступления над нижней губой, создавая таким образом более нормальный профиль.

Authors planning to submit papers to the *Journal* for publication, should be sure to read the "General Information" page, for NEW editorial requirements.

Nous prions les auteurs désireux de soumettre des articles destinés a être publiés dans le "Journal of the International College of Surgeons" de relire attentivement les recommandations publiées sous la rubrique "General Information" page.

Los autores que dessen enviar artículos para su publicación en el *Journal,* deben consultar la página de ésta revista dedicada a "Información General", para conocer los NUEVOS requerimientos editoriales.

Авторы, намеревающиеся послать статьи для публикации в Журнале, должны обязательно прочитать страницу общих сведений (General Information), дающую новые редакторские требования.

Refrigeration in Surgery*

EMIL J. C. HILDENBRAND, B.S., M.D., F.A.C.S., F.I.C.S.
WASHINGTON, D. C.

REFRIGERATION, hypothermy and cryotherapy are terms that have been used in describing the use of local and general application of cold for therapeutic purposes. The uses of cold applications locally and cold environments generally have not been investigated from a medical standpoint nearly so extensively as has heat therapy. The use of local applications of cold for various therapeutic purposes has long been recognized.

Commercial refrigeration has given our modern civilization, particularly in this country, a new approach in the preservation of fruits, vegetables and meats—"frozen foods." Many quick freeze units are now standard household equipment and in the near future certainly will be in practically every home.

Medicine has not been dormant, thanks to men like Lewis, Fay and Allen. These pioneers, experimenting with the use of cold in medicine and elevating this novel therapeutic measure onto a scientific basis, have produced a challenge to each of us. Much of the experimental groundwork has been done in the past few years and much is yet to be done, but what is just as important now is clinical application, followed by good statistical records. The lengthy bibliography is an indication of the interest in refrigeration.

EXPERIMENTAL DATA

Resistance of peripheral tissues to asphyxia at various temperatures was thoroughly studied by Allen. The local effects of a tourniquet are reactive hyperemia, inflammation, paralysis and anesthesia of variable degree and duration depending on length of time of application. Gangrene develops after excessively prolonged application, due either to asphyxia or direct pressure effects. The constitutional effect of a tourniquet application is typically secondary shock, depending on length of time and amount of tissue included.

Elevations of only a few degrees of temperature multiply the effect of asphyxia, so that either local gangrene or shock may result within a fraction of the time required at room temperature. In extreme reduction of circulation as in arteriosclerosis or thrombosis a similar action as with a tourniquet may be obtained. Therefore, it is questionable whether warming limbs in borderline cases will compensate for increase of local metabolism. The survival limit of leg tissues of several mammalian species deprived of circulation at room temperature is above 15 hours. With reduction of temperature, these effects are retarded. Near 0 C. recovery is possible after a tourniquet for 54 hours, and under better conditions this time could perhaps be considerably extended.

Starr placed the extremities of a series of patients with peripheral vascular disease in different environmental temperatures and noted the effects on the usual criteria of the efficiency of the circulation. With the color as an index of the volume flow of blood, and pain as an indication of tissue damage, he concluded that the maintenance of a temperature 30–34 C. was most favorable for increasing the circulation and inhibiting unnecessary oxidation.

Freeman believes that raising the temperature of an ischemic extremity increases both blood flow and metabolism, but that in the presence of diminished blood flow, the relatively larger increase in the latter may produce a greater nutritional deficiency. He believes an anemic extremity should be warmed by surrounding air which is approximately at the same temperature as the average normal warm foot.

Brooks and Duncan experimented with crushed rat tails at various temperatures and

* Read at International College of Surgeons, Washington, D. C., December, 1945.

found that experiments demonstrate conclusively that temperature is a powerful factor in determining the length of time tissues rendered completely anemic remain viable. They found extensive fibrous replacement of muscles and nerves, although refrigeration had prevented massive necrosis. The clinical value of this method of preventing gangrene will be solved not by laboratory experiments but by statistical data derived from clinical experience. In their study on the influence of temperature on wounds, they conclude that there is reasonable doubt of the wisdom of inhibiting an inflammatory reaction by cold application or of the universal application of heat to the extremities of a patient in surgical shock.

Blalock and Mason believe that excessive cold is preferable to excessive heat in shock, at least on animals. Significant elevations of temperature decrease the chance of life and shorten the period of survival. The application of cold does not increase the chance of survival, but is accompanied with a lengthening of the survival of an animal with low blood pressure. Significant elevations of temperature cause more disastrous effects than do depressions of similar degree.

Blalock and Duncan, in studying shock produced by crush injury using dogs extremities, found that cooling of the extremity resulted in less local swelling and in increase in the survival rate if it was maintained during the entire compression period. Lowering of the temperature of the part after the damage had been caused did not appear to exert a favorable influence.

Further experiments with refrigeration by Allen on dogs showed that stoppage of circulation by a tourniquet in the region of the abdomen can be tolerated without fatal injury for considerable periods, a fact which may be of value in operations on the intestinal tract. His refrigeration medium was ice cold saline flushings.

Fay, in his work on refrigeration in malignancy, proved many of the basic facts such as the lowering of metabolism, diminishing blood flow, inhibiting cell growth, attenuating infection and relief of pain.

Allen, in advocating its use clinically in amputations, postulates the following:

1. Convenient for quick easy amputation
2. Pain is absent during and after
3. Absence of shock
4. Continue diet
5. Preservation of tissue prevents sloughing
6. Postoperative inflammation modified, local metabolism reduced, allowing plenty oxygen and less chance of anaerobic infection
7. Edema controlled
8. Bacterial multiplication and toxin formation are repressed
9. Inhibition of blood clotting to cause less thrombosis and embolism
10. No gastro-intestinal disturbances after operation
11. No pocketing, allows drainage from within
12. Reamputation is easy and safe
13. All the above considerations are favorable to low amputation
14. Control of rate of healing is an important advantage
15. Soft rounded stump reveals, avoidance of harmful sclerosis

The literature contains other equally valuable experimental data with varying views as to the possible clinical application of refrigeration to surgery. All investigators agree basically to its use with a tourniquet for amputation in the debilitated and poor-risk patients with infected diabetic or arteriosclerotic extremities. Its use as treatment is still experimental and advocated by only a few. Much will be gained by good and careful statistical evaluation of its use.

CLINICAL APPLICATIONS

Based on the previous experiments, the practical clinical application has been very gratifying according to numerous reports in the literature. The technic of applying cold may be local or general. Local methods commonly used are ice bags, cold water baths, cold compresses, cold water coils or exposure to cold air. For general application, when it is desired to produce a lowering of the sys-

temic temperature, ice packs, exposure to cold air (air conditioned room or refrigeration unit), cold water baths, cold sheet packs and ice water enemas are used.

The everyday use of the ice cap by the doctor or nurse and even the laymen is so commonplace that we probably have made light of its importance. The hot water bottle is gradually but definitely being replaced by cold in many clinical applications. The use of cold for immediate application in contusions and sprains is no longer questioned for its benefit in relief of pain, hemorrhage and edema due to its vasoconstriction, thereby limiting extravasation of blood and lymph into the tissues.

In acute inflammation and congestions, cold is used to produce vasoconstriction and to relieve pain, but it must be used judiciously and applied at the proper time. It is valuable because of its reflex effect upon the vessels of the inflamed area, rather than because of direct action upon the cells of a part. It should only be used early, that is, before stasis occurs. It should not be used in the later stages of inflammation, for it will then only aggravate the existing state; in fact, when there is considerable exudation, cold does actual harm. Cold acts by constricting the vessels of a hyperemic area, thus lessening the amount of blood sent to the part, and preventing the evolution of the process into the stages of retardation, exudation and stasis. Further, it prevents the immigration of leukocytes, retards cell proliferation, relieves pain and tension and lowers temperatures. If cold is too intense, kept on too long or used too late in an inflammation, it may do harm by decreasing the nutritive activity of cells, constricting lymph spaces and channels and increasing existing stasis, thus lowering the vitality of the tissues and producing the danger of gangrene. Cold should not be used in a bacterial inflammation, since it limits leukocytes to the area which have a tendency to localize infection. However, in infected extremities with lymphangitis, the intensity of infection and toxic absorption can be retarded, until the patient is physically improved enough to stand surgery.

Therapeutically, refrigeration has been advocated for gas gangrene by Fay; this is now supported by reports from other quarters. He has found it superior to narcotics for relief of various pains, including the intractable pain of cancer. This control of pain is usually temporary, except for conditions which are cured either spontaneously or by other treatment.

Cold in treatment of damage due to cold, which includes frost bite and immersion foot, has been definitely established by clinical studies of Webster, White, Ungley, Greene and Bigelow. The result of rushing to a hot stove after lengthy exposure to the extreme cold are well known. For frost bitten noses, ears, fingers and toes it was not an unusual sight during earlier years to have frosted parts rubbed with snow until normal feeling and color returned. In other words, a slow thawing with massage was practiced, and there was no development of tissue loss or permanent sensitive areas, of which chilblains are probably the most common.

Allen advocates cooling the body in shock rather than heating. He bases his conviction on animal experiments, which have proven that shocked animals survive longer at reduced than at normal or elevated temperatures. He also recommends its use in burns based on the facts that cold relieves pain without sedatives, checks edema, exudation, infection, tissue devitalization and shock. He believes that it acts similarly to compression bandaging in reduction of exudation and shock and is superior in the control of pain infection and tissue preservation.

Safford has found that a series of brief refrigeration bouts have occasionally given permanent relief of such conditions as painful stumps remaining months after amputation.

Great comfort has been afforded the patient with thrombophlebitis of the superficial veins in limiting the periphlebitis. The maximum benefit is obtained in the first 24–48 hours.

Patients with noninfected peripheral vascular diseases including the organic occlusive and vasomotor types have benefited indirectly from refrigeration in that no one today would consider applying heat to such an extremity. Every one interested in this field knows that

average room temperature is proper for best results.

Karp and his associates recommend local applications of intense cold for the treatment of acne and the scars caused by acne. He used a mixture of solid carbon dioxide, acetone and precipitated sulfur, the favorable response being due to repeated exfoliation. Dermatologists have also found this type of treatment efficient for small hemangiomas.

Mock has successfully used it in skin grafting merely by placing ice caps over donor site for two hours before operation. The number of ice caps used depends on the number of grafts to be taken. He found that by exerting some pressure on the ice cap as with a bandage, deeper anesthesia was obtained. Much of this grafting was done in wards with good takes and healing in two to three weeks. The length fo anesthesia is 20 minutes.

Glasser and Mersheimer report successful use of refrigeration anesthesia without a tourniquet for incision and drainage of the foot and for local excision such as removal of small tumors. We have also found it satisfactory for incision and drainage of localized superficial abscesses, such as infected sebaceous cysts and paronychia. It is an excellent anesthetic for electrodessication of a verruca or nevus, particularly in patients who live in fear and trembling of being stuck with a needle.

McElvenny reported the cooling of limbs without a tourniquet in preparation for surgical procedures. One case with bilateral traumatic amputation was refrigerated for 24 hours after injury, and the stumps were closed 58 hours later. He observed that the subcutaneous fat was firm after refrigeration; a few pieces of skin, purposely not included in the ice, were gangrenous with foul odor, while equally detached pieces of skin included in the ice were well preserved. The closure of stumps was done under general anesthesia with good healing. In another case, a man, 70 years of age, with gangrene, infection and high fever, refrigeration without a tourniquet was used for 28 days. The gangrene did not progress, the temperature returned to normal and no odor was noticed. He is of the opinion, therefore, that cooling without a tourniquet can, by lowering the metabolism of a part, prevent the absorption of toxin and advance of bacterial infection and relieves pain. In parts to be amputated, it is possible, if the cooling is constantly maintained, to continue icing for long periods of time without pain or damage to the parts.

We can report a similar case of refrigeration without a tourniquet for 14 days. This patient had severe cardiac disease with decompensation and marked edema of legs with huge, indolent, necrotic foul-smelling ulcers. Good results were obtained. One leg was amputated at the end of two weeks during which time the cardiac condition had improved, but the patient died eight days postoperatively of the cardiac condition.

Amputation with refrigeration anesthesia is generally accredited to the group at the City Hospital in New York; their first amputation with a tourniquet and with an ice pack was done on Jan. 12, 1941. McElvenny reported in August 1941 that he had seen amputations of the thigh on the Fifth Surgical Service of the Boston City Hospital with the use of ice packs to the limb for 24 hours some 18 months before.

The first large series of 58 cases was reported by Crossman, Allen, Hurley and Ruggiers. In this report the authors gave a very simple method of application of refrigeration. They used hospital sheets and blankets to hold the shaved or finely crushed ice about the extremity. Special tourniquets seemed essential, and they found gum rubber tubing, which, when stretched very tight when applied, caused a small width compression of ½ in., was most satisfactory. The tourniquet must be tight enough to compress the vessels completely. They feel it serves three purposes: (1) it stops inflow of warm blood so that the tissues can be chilled quickly and thoroughly, like excised tissues in an ice box; (2) it stops return flow of cold blood and thus prevents chilling of the body, and (3) it serves for abolishing all nervous and vascular reactions, all defensive mechanism and all protoplasmic reactivity of every kind, including shock, so that the tissues behave as if dead during the time of refrigeration. Other methods for holding the ice have been

suggested but are found to be not as practical nor as convenient. Refrigeration can be carried out in any place, rural or urban, where ice is obtainable. Often the early starting of refrigeration at the site of injury will prevent many serious complications of hemorrhage and shock in the traumatic cases during transport to the hospital. Refrigeration units, thermostatically controlled, are available and very practical.

The technic of preoperative preparation and postoperative care of a patient and of the extremity have been completely described by Allen, Crossman *et al.*, and need not be repeated here.

We first used refrigeration anesthesia with a tourniquet in April, 1942, and to date have used it in 45 cases. We have used it without a tourniquet as a preoperative preparation prior to amputation and for minor surgical procedures as incision and drainage of superficial abscesses and dessication of nevi and verrucae. With the use of the tourniquet, we have done the following procedures: low thigh amputations, 28; middle one-third leg amputation, 2; low one-third arm amputation, 1; sequestrectomy on the foot, 2; toe amputations, 11; aneurysmorrhaphy in the leg, 1. There has been only one immediate death occurring eight hours postoperatively in a middle one-third leg amputation; autopsy permission was not obtained, but clinically it was a picture of pulmonary embolism. Four deaths occurred in our thigh amputations five to eight days postoperatively; two were moribund at the time of operation due to gangrenous extremity, pulmonary complications and heart disease. It is interesting to note that one of these patients had Cheyne-Stokes respiration and did not recognize his family; after two hours of refrigeration and one half hour operating time, his respirations improved and he recognized and talked with his family, only to die five days later of pneumonia. The other patient likewise improved immediately with refrigeration and operation to die six days later of pneumonia. In retrospect, with present knowledge, it seems that these patients would have benefited from prolonged preoperative refrigeration thereby, giving opportunity for intensive treatment of their pulmonary complications and heart disease. The patient with leg ulcers and cardiac decompensation previously mentioned, who received two weeks preoperative refrigeration, died on the eighth postoperative day of the cardiac condition. The other patient developed pulmonary complications, thought to be due to a foreign body. Several esophagoscopies were done, but he succumbed on the fifth postoperative day.

Primary healing occurred in all but four cases; in one, a thigh, the entire stump opened and then healed by granulation; the others developed gangrene of the skin with small sloughs, which soon healed by granulation. Since discarding the flap method and doing only circular amputations, we have obtained primary healing in all cases.

All toe amputations are done by disarticulations at the metatarsal phalangeal articulation with removal of the head of metatarsal; healing proceeds by granulation. In none of these cases have we seen any permanent muscle, blood vessel or nerve injury as a result of a tourniquet and refrigeration. Two of the toe amputation cases later required thigh amputations because of spreading infection. We have found no contraindications.

SUMMARY

The subject of refrigeration, experimentally and clinically, has been reviewed. This novel therapeutic measure is another milestone in the progress of the art of surgery. We offer our experience in the cases enumerated as additional clinical data further to evaluate refrigeration in surgery.

RÉSUMÉ

L'auteur fait une revue du sujet de réfrigération expérimentalle et clinique. Cette mésur thérapeutique marque un progrès de l'art chirurgical. L'auteur rapporte son expérience dans les cas cités et évalue l'importance de la réfrigération en chirurgie.

SOMMARIO

Il soggetto di refrigerazione, esperimentale e di clinica, e stata riesaminata. Questa nuova misura terapeutica e un altra base al progresso nell' arte di chirurgia. Noi offiriamo

la nostra esperiensa nei case enumerati da dati addizionali alla clinica di piu da valutare la refrigerazione nelle operazioni.

SUMARIO

Se revisa el tema de la refrigeración, desde el punto de vista experimental y clínico. Esta novedosa medida terapéutica es otra piedra miliaria en el progreso de la arte de la cirujía. Ofrecemos nuestra experiencia en los casos enumerados como un dato clínico adicional que servirán para evaluar el interés de la refrigeración en cirujía.

Свод.

Сделан обзор экспериментального и клинического замораживания. Эта новая терапевтическая мера является новой вехой в прогрессе хирургии. Мы предлагаем наш опыт в перечисленных случаях как дополнительные клинические данные для дальнейшей оценки замораживания в хирургии.

BIBLIOGRAPHY

1. Adler, D., Refrigerated Cartilage for Use in Plastic Surgery, Arq. de cir. clin. e exper. **6**:608, 1942.
2. Adolph, P. E., Preoperative Measures Used in War Surgery in China; with Special Reference to the Delimiting Tourniquet, Ann. Surg. **119**:246, 1944.
3. Allen, F. M., Tourniquet and Local Asphyxia, Am. J. Surg. **41**:192, 1938.
4. Allen, F. M., Effects of Ligations on Nerves of Extremities, Ann. Surg. **108**:1088, 1938.
5. Allen, F. M., Resistance of Peripheral Tissues to Asphyxia at Various Temperatures, Surg., Gynec. & Obst. **67**:746, 1938.
6. Allen, F. M., Ligation and Refrigeration of Intestines, Surgery **3**:893, 1938.
7. Allen, F. M., Surgical Considerations of Temperatures in Ligated Limbs, Am. J. Surg. **45**:459, 1939.
8. Allen, F. M., Experiments Concerning the Ligation and Refrigeration with Respect to Local Intoxication and Infection, Surg., Gynec. & Obst. **68**:1047, 1939.
9. Allen, F. M., Physical and Toxic Factors in Shock, Arch. Surg. **38**:155, 1939.
10. Allen, F. M., Reduced Temperatures in Surgery, Am. J. Surg. **52**:225, 1941.
11. Allen, F. M., Reduced Temperatures in Surgery, Experiments on Pelvic and Abdominal Refrigeration with Especial Reference in Traumatic and Military Surgery, Am. J. Surg. **55**:451, 1942.
12. Allen, F. M., and Crossman, L. W., Suggested Uses of Refrigeration Anesthesia Including War Surgery, Arch. Phys. Therapy **23**:711, 1942.
13. Allen, F. M., Refrigeration Anesthesia for Limb Operations, Anesthesiology **4**:12, 1943.
14. Allen, F. M., Theory and Therapy of Shock, Am. J. Surg. **60**:335, 1943; **61**:79, 1943; **62**:80, 1943.
15. Allen, F. M.; Crossman, L. W., and Safford, F. K., Reduced Temperature Treatment for Burns and Frost-Bite, New York State J. Med. **43**:951, 1943.
16. Blakemore, A. H.; Lord, J. W., and Stefko, P. L., Restoration of Blood Flow in Damaged Arteries; Non-Suture Method of Blood Vessel Anastomosis, Ann. Surg. **117**:481, 1943.
17. Allen, F. M., and Crossman, L. W., Resenha clin.-cient. **13**:267, 1944.
18. Allen, F. M., Theoretic and Experimental Aspects of Surgical Refrigeration, Canad. M. A. J. **51**:220, 1944.
19. Bierman, W., Conductive Cooling of Living Human Tissue, Proc. Soc. Exper. Biol. & Med. **12**:518, 1939.
20. Bigelow, W. G., Modern Conception and Treatment of Frost-Bite, Canad. M. A. J. **47**:529, 1942.
21. Blarcom, C. Van., Nursing Care in Ice Anesthesia, Am. J. Nursing **43**:799, 1943.
22. Blackwood, W., and Russell, H., Experiments in Study of Immersion Foot, Edinburgh M. J. **50**:385, 1943.
23. Blalock, A., and Mason, Heat and Cold in Shock, Arch. Surg. **42**:1054, 1941.
24. Blalock, A., and Duncan, G., Traumatic Shock, Surg., Gynec. & Obst. **75**:401, 1942.
25. Blalock, A., Effect of Lowering Temperature on Injured Extremities With a Tourniquet, Arch. Surg. **46**:167, 1943.
26. Bowers, W. F., Refrigeration Therapy in Vascular Trauma, Mil. Surgeon **93**:289, 1943.
27. Brooks, B., and Duncan, G., Effect of Pressure on Tissues, Arch. Surg. **40**:696, 1940.
28. Brooks, B., and Duncan, G., Effect of Temperature on Survival of Anemic Tissues, Ann. Surg. **112**:130, 1940.
29. Brooks, B., and Duncan, G., Influence of Temperature on Wounds, Ann. Surg. **114**:1069, 1941.
30. Cannon, W. B., Traumatic Shock, D. Appleton & Co., New York and London, 1923.
31. Crossman, L. W.; Ruggiers, W. F.; Hurley, V., and Allen, F. M., Reduced Temperatures in Surgery. II. Amputation for Peripheral Vascular Disease, Arch. Surg. **44**:139, 1942.
32. Crossman, L. W.; Hurley, V.; Ruggiers, W., and Warden, C., Refrigeration Anesthesia, Anesth. & Analg. **21**:241, 1942.
33. Crossman, L. W., and Hurley, V., Embolism of the Femoral Artery; Case Report, J. Internat. Coll. Surgeons **5**:171, 1942.
34. Crossman, L. W., and Allen, F. M., Refrigeration Anesthesia and Treatments, Anesth. & Analg. **22**:264, 1943.
35. Cutart, D. E., Refrigeration Anesthesia, Technic, Indications and Results, Rev. paulista de med. **24**:289, 1944.
36. DaCosta, J. C., Modern Surgery, W. B. Saunders Co., Philadelphia, 1926.
37. Davis, L.; Scarff, J. W.; Rogers, N., and Dickinson, M., High Altitude Frost-Bite, Surg., Gynec. & Obst. **77**:561, 1943.
38. Day, R., Effect of Cold on Man. Review Series, Dept. of Pediatrics, Col. Univ. & Babies Hosp., N. Y. **1**:no. 2, 1943.
39. Driessens, J., Decrease of Adrenocortical Hormone in Adrenal Cortex of Guinea Pig Subjected to Intense Refrigeration, Compt. rend. Soc. de biol. **137**:255, 1943.
40. Duncan, G., and Blalock, A., Shock Produced by Crush Injury. Effect of Plasma and Local Cold, Arch. Surg. **45**:183, 1942.
41. Duncan, G., and Blalock, A., Effect of Application of Tourniquet on General Response to Gross Trauma to an Extremity, Surgery **13**:401, 1943.
42. Dziob, J. M., and Brown, R. K., Reduced Temperature Anesthesia for Surgery of Trauma, Indust. Med. **12**:79, 1943.
43. Elvin, J., Carbon Dioxide Snow—Electrocautery Technic for Occlusion of Large Veins. Surg., Gynec. & Obst. **76**:43, 1943. For Occlusion of Arteries *ibid.* **76**:456, 1943. Solid Carbon Dioxide—Ferric Chloride. Technic for Hemostasis, Arch. Surg. **46**:386, 1943.
44. Fay, T., Clinical Report and Evaluation of Low Temperature in Treatment of Cancer, Proc. Internat. Assemb. Inter-State Post Grad. M. A. North America 292, 1941.
45. Frobeck, E. H., Hypothermia in Military Practice, M. Clin. North America **27**:1166, 1943.
46. Freeman, N. E., Influence of Temperature on Development of Gangrene in Peripheral Vascular Disease, Arch. Surg. **40**:326, 1940.
47. Gorrie, J., Pioneer in Mechanical Refrigeration. I. S. Cutter, Arch. Dermat. & Syph. **50**:308, 1944.
48. Green, H. D., Traumatic Ischemic Shock, with Observations on Effects of Environmental Temperature, Paper read before American Medical Association June 14, 1944.
49. Greene, R., Cold in Treatment of Damage Due to Cold, Lancet **2**:695, 1942.
50. Haley, E. R., Arteriosclerotic Gangrene; a Report on Refrigeration Prior to Amputation, Arch. Surg. **46**:518, 1943.
51. Hall, F., Use of Quick Freezing Methods (With Description of Apparatus) in Gynecologic Practice; Preliminary Report, Am. J. Obst. & Gynec. **43**:105, 1942.
52. Heinbecker, H. P., and Large, A., Refrigeration in Clinical Surgery, Ann. Surg. **120**:707, 1944.
53. Jamardo, N.; Guelman, J., and Reta, M. G., Study on Powdered Refrigerated Tissues, An. d. ateneo, Buenos Aires, p. 231, 1943.
54. Karp, F. L.; Nieman, H. A., and Lerner, C., Cryotherapy for Acne and Its Scars, Arch. Dermat. & Syph. **39**:995, 1939.
55. Kennedy, J. A., Technic and Device for Application of Ice Anesthesia for Amputation of Extremities, U. S. Nav. M. Bull. **41**:226, 1943.
56. Kovacs, R., The 1943 Year Book of Physical Therapy, Year Book Publishers, Inc., Chicago, 1943.

(Continued on page 393)

The Diagnosis and Treatment of Brain Tumor*

RUDOLPH JAEGER, M.D., F.A.C.S., F.I.C.S.†
PHILADELPHIA

FROM almost 20 years of experience in the specialty of neurologic surgery I have learned that by far and wide it is the surgeon who most often is called upon to make the diagnosis and decide on the treatment of brain tumor. This is quite natural when one realizes that, by inclination and training, the surgeon is intensely interested in all problems pertaining to the mechanical correction of human ills. It is therefore right and proper that he be kept up-to-date on the progress of neurosurgery. It is one of the responsibilities of the neurosurgeon to see that the great group of the various surgical specialists is kept fully informed regarding the more recent developments in neurosurgery.

The diagnosis of brain tumor, as to location and probable type, is more precise and accurate than the diagnosis of any other lesion in the deep organs of the human body. This is true because no other organ has so many delicate centers and tracts to indicate the exact location of a deep seated disorder. For this same reason, relatively small lesions cause early manifestations which permit surgical attack far sooner than a lesion of similar size in any other organ. A tumor the size of a pea will produce unilateral blindness and optic atrophy when it grows in the optic foramen. A tiny aneurysm not more than 5 mm. in diameter of the posterior communicating artery will cause a telltale oculomotor nerve paralysis. A tumor not more than 2 cm. in diameter in the motor area of the brain may indicate its presence by focal epileptic attacks. Each of these and many similar tiny lesions should be accurately diagnosed and safely cured by modern surgical methods before devastating effects have occurred.

Headache is the most common single symptom of brain tumor, but unfortunately it is often absent. If present, it is dull and throbbing in character, gradually increases in severity and is seldom constant. Patients with intracranial masses may even be free from headache for hours or days at a time.

Certain mental changes characterize brain growths. Irritability, facetiousness, delirium, euphoria, somnolence, stupor and coma are common. Too often the diagnosis is not made until the stage of coma is reached. These mental abnormalities may arise suddenly, and they may change rapidly from one to the other.

Generalized convulsions starting in adult life are very apt to be due to brain tumor. Convulsions starting in one location and progressing to other parts of the body, or limited to a single part, indicate a tumor in that portion of the brain corresponding to the muscles involved. The patient may or may not be unconscious during the attack.

Vomiting is the earliest sign of brain tumor in children. In adults it may occur with headache. It is often sudden and forceful, giving rise to the term "projectile vomiting." Any person having persistent vomiting, in whom a causative gastro-intestinal disorder cannot be found, must be suspected of having a brain tumor.

Blindness in an apparently normal eyeball is frequently caused by brain tumor. Fortunately all parts of the eyeball are open to direct inspection, so that disease of the eyeball can be readily recognized by an ophthalmologist. Optic atrophy and visual field defects help localize the site of the lesion and determine the nature of the growth.

Ophthalmoplegia, loss of smell or subjective abnormal odors, unilateral exophthalmos, unilateral loss of hearing, ataxia and choked disk are all common signs of brain tumor.

Other common physical signs are enlargement of the skull in children, osteoma for-

* Read before the Eleventh National Assembly, United States Chapter, International College of Surgeons, Detroit, Michigan, October, 1946.
† Clinical Professor of Neurological Surgery and Chief of the Department of Neurological Surgery, Jefferson Medical College and Hospital, Philadelphia.

mation on the skull in adults, infantile body development, pituitary cachexia and acromegaly.

Roentgen studies of the skull often give enough information to tell the complete story, for many tumors are calcified, others thicken or thin the bone near them, while some will push a calcified pineal body from its normal midline position. In cases of doubt, pneumoventriculography will practically always clarify the diagnosis and localize the growth precisely. Spinal puncture is seldom necessary for diagnosing brain tumor and is often dangerous.

It is in the method of treating brain tumor that the real advances have been made in the past 10 years. These advances deal with greater technical skill on the part of the operator and the improvement of mechanical devices. Textbook knowledge alone is not sufficient for operating on the patient with brain tumor. Mechanical ability above all things is necessary, and this can be developed only by a surgeon who is instinctively inclined to manual gymnastics. Many aspects of surgical technic have been perfected so that operations on the skull can be performed more easily, conveniently and quickly. The greatest single technical improvement has been in the position of the patient in relation to the surgeon and his assistants. By simplifying and perfecting the erect position, as first advocated by DeMartel for cranial surgery, it is now possible to perform brain operations in far less time than was formerly required. It is quite usual for a craniotomy to require only 1½–3 hours for completion, and longer operations are extremely infrequent. All operations on the anterior two thirds of the skull are performed in a specially adapted dental chair in the semi-erect position. With a special head rest attachment, the head can be arranged to suit any desired approach. The chair easily raises or lowers to a convenient level for the surgeon. With the head well elevated, there is less venous congestion in the brain, the brain is looser in the skull and there is less blood loss and consequently less operative shock.

For occipital craniotomy, suboccipital craniectomy and cervical and upper dorsal laminectomy, the patient sits perfectly erect with the head held in a special adjustable face rest. Here again, the patient can be lowered or raised instantly at the will of the operator.

The erect position has been criticized because of the fear that postural syncope might be conducive to shock. Having used this position in thousands of cases, I have not had a single fatality from this complication. However, I do say that extreme caution is necessary to prevent and replace blood loss. A skilled surgeon can practically always anticipate excessive bleeding and should be prepared to combat it instantly by transfusion.

Intracranial operations are always started with a large intravenous needle and a salt solution drip. Apparatus for cannulating an ankle vein is kept at hand for instantaneous use, and blood is "pumped" in rapidly with large syringes should the bleeding be brisk or the drip method fail. Adequate quantities of blood furnished by a well organized blood bank in close proximity to the operating room is an essential requirement for safe brain surgery.

Hemorrhage is largely controlled with the electrocoagulator. Silver clips are used only occasionally at the present; the surgeon frequently performs dozens of operations without using a single clip. Pieces of temporal muscle, fibrin foam and soluble cellulose occasionally are needed to produce additional hemostasis.

Local anesthesia is used on all stuporous patients, but general anesthesia is advisable on the mentally alert ones. A basal anesthesia of 1 Gm. pentothal to each 50 lb. of body weight, dissolved in 20 cc. tapwater, is given rectally, followed by profound anesthesia with open drop ether through an endotracheal tube.

Numerous other technical advances have been made to shorten the operative time, thereby reducing hemorrhage and shock and the chance for wound infection. The operator and assistants no longer stand on high boxes, but stand comfortably on the operating room floor. A brilliant headlight instead of the old-fashioned distal retractor assures adequate lighting. Constant suction for removal of blood is a necessity, and self-retaining retractors of various types add to the clear visualization of the deeper operative fields.

SUMMARY

Modern surgical methods have entirely changed the outlook for recovery in cases of brain tumor. Complete cures will become more common as surgeons are better informed concerning the diagnostic characteristics of brain tumors.

RÉSUMÉ

Les méthodes chirurgicales modernes ont améliorées le pronostic des tumeurs cérébrales soumises à un traitement opératoire. Les guérisons complètes seront dans le futur plus nombreuses car les chirurgiens seront mieux renseignés les caractéristiques diagnostiques des tumeurs cérébrales.

SOMMARIO

Moderni metodi chirurgici hanno interamente cambiato la prospettiva di ricoverare in caso di tumore al cervello. Complete cure sono piu comune che i chirurghi sono meglio informati riguardo la diagnosi caratteristiche di tumori cerebrali.

SUMARIO

Los modernos métodos quirúrgicos han cambiado la perspectiva de la recuperación en los casos de tumor cerebral. Curas completas se producirán con más frecuencia en cuanto los cirujanos estén mejor informados en lo que a las características del diagnóstico se refiere de los tumores cerebrales.

Свод.

Модерные хирургические методы совершенно переменили взгляд на выздоровление при опухоли мозга. Совместно с лучшим хирургическим пониманием диагностических характеристик мозговых опухолей полное выздоровление сделается более обычным.

REFRIGERATION IN SURGERY

(Continued from page 390)

57. Kirz, E., Gas Gangrene after Amputation under Refrigeration Anesthesia; Warning Regarding Contamination of Ice, Brit. M. J. **2**:662, 1944.
58. Lange, K., Effect of Cold in Capillary Permeability, Bull. New York M. Coll., Flower and Fifth Ave. Hosps. **5**:154, 1943.
59. Lewis, T., Normal and Injurious Effects of Cold upon Skin and Underlying Tissues. Chilblains and Allied Conditions (Holmes Lecture), Brit. M. J. **2**:837, 1941.
60. Lewis, T., Normal and Injurious Effects of Cold upon Skin and Underlying Tissues; Reactions to Cold and Injury of Normal Skin (Holmes Lecture), Brit. M. J. **2**:795, 1941.
61. Loboshev, S. V., Refrigeration Anesthesia for Amputations of Extremities; Preliminary Report, Khirurgiya **2**:16, 1944.
62. McElvenny, R. T., Effects of Cooling Traumatized and Potentially Infected Limbs, Surg., Gynec. & Obst. **73**:263, 1941.
63. McElvenny, R. T., Present Status of Cooling Limbs in Preparation for Surgical Procedures, Am. J. Surg. **58**:110, 1942; Freezing Method, Chicago Surg. Soc. May, 1943.
64. McElvenny, R. T., Recent Evolution of Cold as Adjunct to Surgery, Arch. Phys. Therapy **25**:599, 1944.
65. McEwan, D., Refrigeration Anesthesia of Extremities; Application (in Amputation) and Use, with Report of Cases, J. Florida M. A. **31**:153, 1944.
66. Miyakawa, G., Refrigeration Anesthesia with Special Reference to Treatment of Severely Damaged Extremity Complicated by Visceral Injury, Am. J. Surg. **66**:384, 1944.
67. Mock, H. E., Jr., Refrigeration Anesthesia in Skin Grafting, Bull. Am. Coll. Surgeons **28**:56, 1943; J. A. M. A. **122**:597, 1943.
68. Mock, H. E., and Mock, H. E., Jr., Refrigeration Anesthesia in Amputations, J. A. M. A. **123**:13, 1943.
69. Mock, H. E., and Tannehill, E. H., Fractured Pelvis Complicated by Gangrene of Extremity—Amputation under Refrigeration Anesthesia, Surg., Gynec. & Obst. **78**:429, 1944.
70. Moore, A. E., and Guthrie, D. W., Amputation under Ice Anesthesia, New Zealand M. J. **42**:97, 1943.
71. Moquivar, M., Amputation of Thigh Using Refrigeration as Only Anesthetic, Rev. méd. d. Hosp. gen. **4**:833, 1942.
72. Neller, J. T., and Schmidt, E. R., Refrigeration Amputation, Wisconsin M. J. **43**:936, 1944.
73. Newman, M. K., Hypothermic Anesthesia; Use in Surgery of Extremities, Arch. Phys. Therapy **23**:357, 1942.
74. Newman, M. K., Present Status of Therapeutic Hypothermy, Arch. Phys. Therapy **24**:389, 1943.
75. Ottaway, J. P., and Foote, J. J., Refrigeration of Wounded Extremities, U. S. Nav. M. Bull. **43**:1041, 1944.
76. Richards, V., Refrigeration Anesthesia in Surgery, Am. Surg. **119**:178, 1944.
77. Rupp, N. H., Modern Concept of Refrigeration Anesthesia, Anesth. & Analg. **22**:46, 1943.
78. Roxa, C. A.; Lozaconi, A. F., and Lacour, J. P., Refrigeration Anesthesia, Rev. san. Mil., Buenos Aires **43**:979, 1944.
79. Safford, F. K., Jr., and Nathanson, M. B., Clinical Observations on Tissue Temperature, Pathologic and Therapeutic Effects, Arch. Surg. **49**:12, 1944.
80. Sano, M. E., and Smith, L. W., Effect of Lowered Temperature upon Growth of Fibroblast in Vitro, Application to Wound Healing, J. Lab. & Clin. Med. **27**:460, 1942.
81. Segerberg, L. H., Ice Anesthesia; Methods of Mortality Reduction in Amputations for Arteriosclerotic Gangrene, Am. J. Nursing **43**:797, 1943.
82. Starr, I., Jr., Am. J. M. Sc. **187**:498, 1934.
83. Smith, L. W., and Fay, T., Observations on Human Beings with Cancer, Maintained at Reduced Temperature of 75 to 90 Degrees F., Am. J. Clin. Path. **10**:1, 1940.
84. Smith, L. W., Use of Cold in Medicine, Ann. Int. Med. **17**:618, 1942.
85. Smith, W. E., Refrigeration of Gangrenous Extremities before Amputation; Case, Ohio State M. J. **38**:826, 1942.
86. Stevenson, J. A. F., Reduced Temperatures in Surgery, McGill M. J. **12**:36, 1943.
87. Stille, B., Death of Micro-Organisms during Repeated Freezing, Arch. f. Mikrobiol. **13**:293, 1943.
88. Ungley, C. C., Treatment of Immersion Foot by Dry Cooling, Lancet **1**:681, 1943.
89. Webster, D. R.; Woolhouse, F. M., and Johnston, J. L., Immersion Foot, J. Bone & Joint Surg. **24**:785, 1942.
90. Webster, J. P., Refrigerated Skingrafts, Am. Surg. **120**:431, 1944.
91. White, J. C., Vascular and Neurological Lesions in Survivors of Shipwreck, New England J. Med. **228**:211, 1943.
92. Wilson, H., and Roome, N. W., Effects of Constriction and Release of an Extremity, Arch. Surg. **32**:334, 1936.
93. Yudin, S. S., Refrigeration Anesthesia for Amputations, Am. Rev. Soviet Med. **2**:4, 1944.

Sump Drainage in Surgical Management of Prostatectomy

LOWRAIN E. McCREA, M.D., F.A.C.S., F.I.C.S.*
PHILADELPHIA

GREAT advances in the surgical management of suprapubic prostatectomy, both preoperative and postoperative, have been effected in the past few years. The once dreaded removal of the prostate with the excessive mortality and long postoperative convalescence is now considered a relatively safe surgical procedure of average hospitalization. Recent innovations of postoperative management have added further security and comfort to the patient. Postoperative drainage of the bladder was routinely accomplished by rubber tube drains from the inception of the surgical procedure until a few years ago. It has been within the last decade that Stedman, Ritter, McCarthy and others designed and used positive suction for evacuation of the bladder. Babcock designed and perfected the stainless steel sump for intraperitoneal drainage. It was following his observations that I designed a sump drain for vesical drainage. During the years of its use, the drain has been subjected to modifications and improvements, but the basic principle of positive suction has remained. Sump drainage assures positive evacuation of the bladder.

The benefits of sump drainage are as numerous to the patient as they are gratifying to the surgeon. Dry surgical dressings, dry comfortable patients, decrease the frequency of occurrence of fascial necrosis, pyelonephritis and pneumonia. These factors are worthy of consideration. The length of postoperative hospitalization has been remarkably reduced, a factor of great economic importance to the patient and to the hospital during these days of increased hospital admittance.

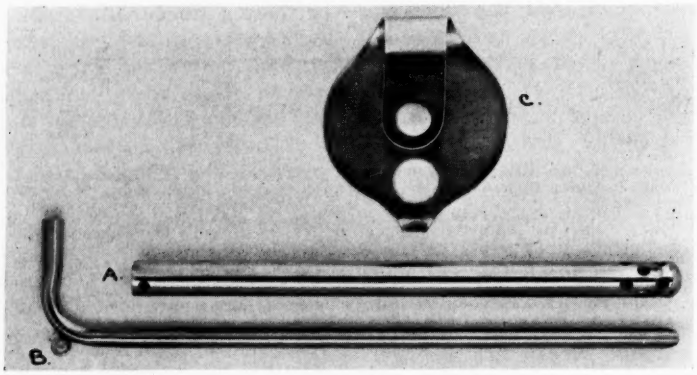


Fig. 1.—Component parts of sump drain. *A*, sump tube, 6 in. long, 10 mm. in diameter. Walls are 0.015 in. thick. *B*, central or suction tube, ¼ in. in diameter, sufficiently long to rest on bottom of tube *A*. Tube is anchored in position within sump by placing wire or tape through small metal loop and through hole in sump tube *A*. *C*, device to hold sump in desired position within bladder. Sump tube *A* is fitted in central holes of disks. Packing is passed through larger eccentrically placed aperture.

* Read before the Second Southern Assembly, United States Chapter, International College of Surgeons, Tampa, Florida, February, 1947.

Sump drainage as it is used and described consists of an individual unit for each patient, whether in a private room or in the ward. Being an individual unit, the required amount of vacuum may be regulated for each and every patient. Sump drainage has one great disadvantage. It is a mechanical contrivance that must be thoroughly understood by the intern and nursing staff. Failure to recognize the important factors of a completely closed system to cause suction at a given point will be met with many disappointments and considerable dissatisfaction in its use.

Sump drainage equipment consists of a sump drain, a properly stoppered bottle and a motor-driven pump producing negative pressure. It is believed that the drain of greatest utility is one made of stainless steel, 6 in. long, 10 mm. in diameter, having a wall 0.015 in. thick (Fig. 1). A series of ⅛ in. holes, ¼ in. apart are placed ½ in. from the rounded or distal end. A second series of apertures is placed ⅜ in. above the first row of holes. The central or suction tube is ¼ in. in diameter and extends to a level below the holes of the sump tube. The sump is inserted

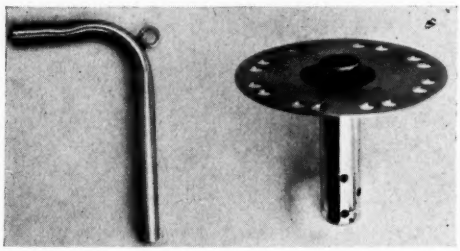


Fig. 2.—Small sump equipment used to maintain dry dressing during stage of healing of bladder. Sump is 1 in. long, 10 mm. in diameter. It is held in position, beneath dressings, by adhesive straps across abdomen.

at the time of operation and is held at the desired depth within the bladder at all times. When the urine is clear following removal of the pack, a short sump (Fig. 2), 1 in. long, 10 mm. in diameter, is inserted into the wound beneath the dressing. A urethral catheter is instituted, and the bladder is permitted to heal. Vacuum pressure is created by a small motor and pump combined in a single unit (Fig. 3). The motor operates on 110 volts, 60 cycle alternating current. The motor is self-starting, nonreversible and noiseless. The motor and gearing are self-lubricating and will run continuously without attention for a period of two weeks. The motor, operating at a set speed, exerts and maintains continuous, negative pressure in the bottle or reservoir. The total of the vacuum capacity of the pump is not used, but is regulated by a valve so that only a portion of it is used.

The surgical technic of suprapubic prostatectomy is not varied when sump drainage is used. It is contended that a small incision in the skin, fascia and bladder is preferable to a long incision. It is believed that the smallest incision possible for efficient work is the most satisfactory. Contrary to the general conception that a long incision will heal as readily as a short one, suprapubic incisions are frequently infected, may break down and become necrotic. To date, after seven years' experience with sump drainage, there has not been a single instance of wound infection or fascial necrosis, but it has been learned that a lineal incision 2 or 2½ in. long is most satisfactory. The incision started at the uppermost level of the symphysis pubis is continued upward toward the umbilicus. In depth, the incision is continued through the subcutaneous tissue and the sheath of the rectus muscle without dissection, the muscle fibers are separated and the bladder is exposed. Following enucleation of the hyperplastic tissue, a 2 in. gauze pack is used in controlling postoperative bleeding. The pack is preferred to the Pilcher or Hagner bag because it takes less space. The old question of whether to drain or not to drain the space of Retzius has been subjected to considerable debate. In the seven years' experience with vesical sump drainage, the space of Retzius has never been drained, and in not a single instance has infection occurred. The stainless steel sump drain does not tend to adhere to the tissue. It may be readily removed with ease if necessary and is readily reinserted without discomfort to the patient.

With rubber tube drainage there is constant urine drainage around the tube, which

causes the dressings to become wet, fascial necrosis is common and the occurrence of pneumonia and pyelonephritis is frequent. With sump drainage it has been clearly demonstrated that the patients remain dry throughout their convalescene, lessening the danger of pneumonia as a postoperative complication. Likewise, ulceration of the skin of the abdomen or the buttocks by contact with urine is prevented. Wound healing is primary and rapid. Infection of the skin wound or fascial necrosis does not occur. The only portion of the wound that heals by granulation is at the site of insertion of the sump drain. The incidence of pyelonephritis as a postoperative complication has apparently been reduced. In a recent survey of 58 deaths following prostatectomy in which rubber tube drainage was used, the incidence of pyelonephritis was 15.5 per cent. During the seven years in which sump drainage has been used, only one instance of pyelonephritis has been observed. This occurred in a debilitated old gentleman who was known to have chronic leukemia. The tissue removed at operation showed leukemic infiltration. The blood picture changed rapidly after operation. The man died of pyelonephritis in spite of all measures to control it.

The time of postoperative hospitalization has been remarkably reduced. In a recent survey of 217 cases in which rubber tube drainage following prostatectomy was used, the average length of hospital stay was 32.6 days. In 100 consecutive unselected cases in which sump drainage was used, postoperative hospital stay was 18.5 days. This series included patients with advanced cardiac disease who chose to remain in the hospital for a longer period than was required for wound healing. The shortest postoperative stay was 8 days; 11–13 days was usual.

Admittedly there are disadvantages to the use of the sump. As has been stated, the sump drain is a mechanical contrivance, the principle of which must be understood by the nursing and intern staff. In addition, the sump drain must be rotated at least twice a day to prevent freezing of the sump to the mucosa. If the mucosa enters the holes of the sump, the drain is removed only by force, which would cause considerable pain and discomfort to the patient. Finally, pain may be experienced if the sump is permitted to rest on the trigone. The sump should always be introduced to such a depth and maintained so that it does not touch the base of the bladder.

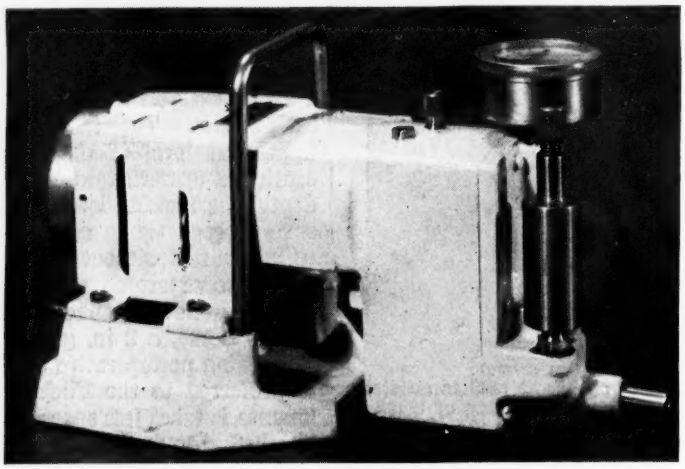


Fig. 3.—Motor suction pump unit. Motor operates on 110 kv., 60 cycle a.c. Gearing and pump are self-lubricating and will run continuously for about two weeks without attention.

It is believed, however, that the advantages of sump drainage far outweigh the disadvantages. It has been repeatedly demonstrated that the patient is continuously dry throughout postoperative convalescence. Ulceration of the skin of the abdomen and buttocks is prevented. The danger of pneumonia is lessened. The occurrence of pyelonephritis as a postoperative complication is apparently reduced. The wound heals by primary healing. Infection of the wound or fascial necrosis does not occur. The length of hospital stay has been drastically reduced. Removal or reinsertion of the tube may be accomplished without pain or discomfort to the patient.

I am indebted to Mr. James Davies, Research Machinist, Temple University Medical School, for his aid in the design and construction of this equipment.

SUMMARY

The author describes and illustrates a sump drain which he designed for vesical drainage, assuring positive evacuation of the bladder. Primary advantages of its use are dryness of dressings, rarity of fascial necrosis, pyelonephritis and pneumonia and short duration of hospitalization.

RÉSUMÉ

L'auteur décrit et illustre un drain qu'il a concie et qu'il emploie pour assurer le drainage de la vessie urinaire et son evacuation positive. Ses principaux avantages sont qu'il assure la sécheresse des pansements, et la rareté de la nécrose fasciale, de la pyélonephrite, de la pneumonie on emploi abrège de beaucoup le séjour à l'hôpital.

SOMMARIO

L' autore descrive ed illustra il prosciugamento del serbatoio di cui disegna per lo scorrimento viscicale, assicura positiva evaquazione della viscica. Primario vantaggio di quest' uso e il prosciugamento dell impaccature, rarita di necrosi fasciali, pilonefrite e polmonite e poca durata in ospedale.

SUMARIO

El autor describe e ilustra un colector de desague que diseñó para el drenaje vesical, asegurando la positiva evacuación de la vejiga. Las ventajas principales de su uso son el secado de las grasas, la rareza de la gangrena fascial, la piolonefritis y la pneumonía y la corta duración de la hospitalización.

Свод.

Автор описывает и иллюстрирует дрену помещенную в наиболее низкое положение, которую он приспособил для мочевого дренажа и которая обеспечивает положительную эвакуацию пузыря. Главными преимуществами этого низкого дренажа являются: сухость перевязок; редкость фасциального некроза, пиелонефрита и пневмонии, а также короткое пребывание в больнице.

For qualification for fellowship in the International College of Surgeons address Dr. Harry Bacon, Secretary of Qualification Board, 2031 Locust Street, Philadelphia 3, Pennsylvania.

20 Years' Experience with the Barraquer Technic of Cataract Extraction*

OTIS R. WOLFE, M.D., F.I.C.S.†
MARSHALLTOWN, IOWA

IN 1925 we presented before the Eye Section of the Iowa State Medical Association a paper entitled "Intracapsular Extraction of Cataract by the Barraquer Method"; it was published in the Iowa Medical Journal.[1] In 1930 we presented before the American Academy of Ophthalmology and Otolaryngology a similar paper, recorded in the Transactions for that year,[2] and in 1931 in the American Journal of Ophthalmology.[3]

Now, with over 20 years of experience with approximately 3,000 cases, we report the technic as essentially the same. There have been some minor changes, such as the type of corneal section, sutures and so forth, as will be enumerated, but the general principles have not been altered.

Up to about 1920, American ophthalmic surgeons might be said to be divided into two camps regarding the operation for senile cataract. There was the first group which advocated a classic capsulotomy before removal of the lens; the second group endeavored to remove the lens with the capsule intact; the former group predominated in 1920. About 1925, however, there was a marked change of sentiment and many surgeons began to prefer the second method. I believe at the present time that most ophthalmic surgeons use some technic directed toward the removal of the lens with the capsule intact. Kirby [4] has written an excellent paper on this subject, and I agree with him generally on the surgical indications. We make one exception regarding the Barraquer technic in some hypermature cataracts, which will be discussed later.

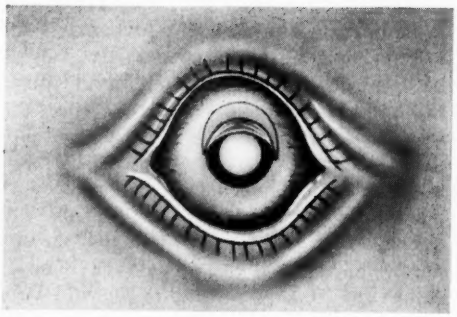
The tabulation of highly satisfactory visual results obtained by surgeons with intracapsular extraction in both Europe and this country leaves few arguments in favor of the old extracapsular technic. Patients who have intracapsular extraction on one eye were certainly not satisfied with another type of surgery on the second eye. In India it was reported that thousands of natives would pass by the established government eye clinics in Indian cities to journey a much greater distance to the clinic of Colonel Smith, for the practical reason that they obtained superior visual results, even though Colonel Smith was not a recognized eye specialist at that time.

Smith's intracapsular method became well known as the Indian operation. Most American surgeons felt, however, that while the Smith technic gave excellent results in many cases, it caused too much trauma and vitreous loss for the American private patient. Stachalahou, Kalt, Barraquer and others in Europe and Knapp, Torek, Verhoff and others in this country then developed various intracapsular technics by forceps. These, in many cases combined with expression, had advantages over the Smith intracapsular technic without its manifest disadvantages. Smith does however, deserve credit, because his superior results with the intracapsular technic stimulated investigation in this field, which resulted in the modified intracapsular technics of other surgeons.

Time, and the scope of this paper, do not permit a detailed presentation of all the arguments for intracapsular surgery. Briefly, I deem it highly desirable that an intracapsular extraction be considered in all cataract cases, except possibly in juvenile or soft cataracts. If intracapsular extraction is not accomplished in every case, our average is nevertheless

*Read before the Eleventh National Assembly, United States Chapter, International College of Surgeons, Detroit, Michigan, October, 1946.

† Eye Dept., Deaconess Hospital and Wolfe Cataract Clinic.



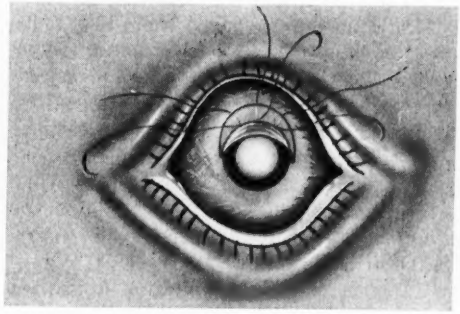
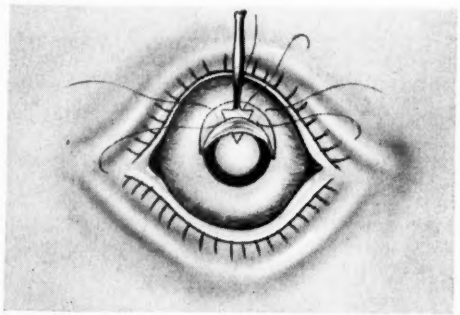


Fig. 1 *(left)*.—This and the following illustrations show Wolfe's modification of Barraquer's technic. Conjunctival flap, concentric with cornea, dissected to limbus running from 3 to 9 o'clock. Fig. 2 *(right)*.—Three atraumatic silk sutures placed at 2, 10 and 12 o'clock. Includes conjunctiva above, anchored in sclera 0.5 mm. from limbus.



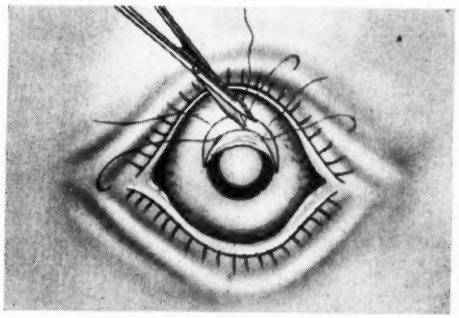
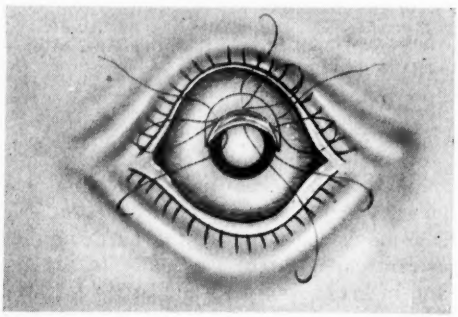


Fig. 3 *(left)*.—Keratome incision at limbus. Fig. 4 *(right)*.—Corneal section enlarged by scissors.



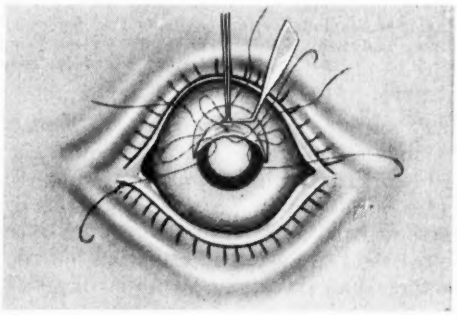
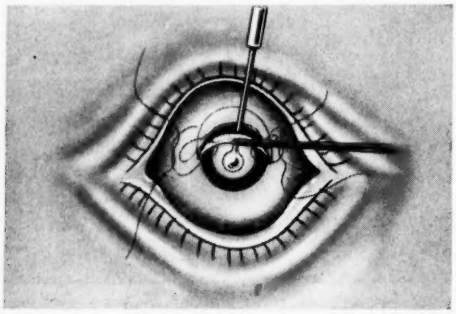


Fig. 5 *(left)*.—Two needles at 10 and 2 o'clock are passed through conjunctiva from behind forward, looped and loosely tied. Central suture can also be placed in corneal lip, if presentation of vitreous is anticipated. Routinely, this suture is not placed in corneal lip until after cataract is extracted and other two sutures are securely tied. Fig. 6 *(right)*.—Small central peripheral iridectomy is performed.

about 95 per cent, and we have the satisfaction of knowing that we have given the patient the best possible chance of maximum vision. There are, however, two exceptions. First, known bleeders or those patients who, after the incision is made, have a persistent hemorrhage from the iris and scleral vessels, or possibly from the choroidal vessels, indicating that bleeding might occur. Second, mental cases or those patients manifesting an uncooperative attitude either before or after surgery; these may later be operated on under general anesthesia. Our operative setup is such that we are prepared to perform intracapsular surgery in all cases, but we make our final decision when ready for the lens extraction. In juvenile or soft cataracts our double cannula suction technic is utilized.[5]

on first examination. We notify every patient to be operated on that in addition to our eye examination, at least three to five days will be necessary for the eye and general physical examination prior to initiating specific eye treatment or surgery. We are more and more impressed with the importance of this. In many instances, except in juvenile or traumatic cataract cases, we are dealing with a sick eye in a sick patient, and the percentage of pathology demonstrated sooner or later comes up to 75 per cent or more. We are convinced that ophthalmic surgeons attaining nearly 100 per cent surgical success with cataract surgery are those who have a satisfactory intracapsular technic, and who give the most complete analysis and treatment of those cases before and after surgery.



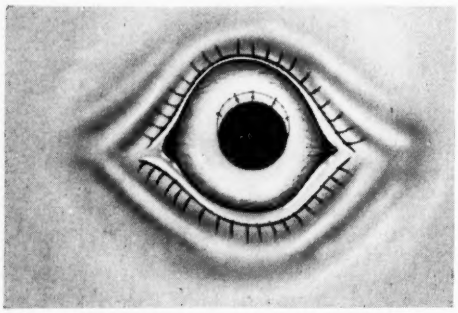


Fig. 7 *(left).*—Erisphake is placed on lens by direct view; counterpressure made until vacuum grasps capsule. Cataract is then lifted, but varied amount of expression is also utilized as cannula becomes pneumatic forceps. By grasping conjunctival flap, cornea is everted and erisphake applied to lens capsule by direct view. Counterpressure is exerted and vacuum pressure is begun. Cataract is lifted with erisphake, cannula acting as pneumatic forceps. Fig. 8 *(right).*—Lateral sutures at 2 and 10 o'clock drawn and tied. Central one at 12 o'clock completed. Two to four additional conjunctival sutures are usually added for complete closure of conjunctiva.

Many years ago it was our policy to consider diabetic cataract patients, known for their bleeding potentialities, as counterindications for intracapsular surgery. Now, in most such cases, with adequate preliminary analysis and treatment, we make no exception but remove these diabetic cataracts with intracapsular surgery.

Too much cannot be said for exacting examinations and preliminary treatment. We would estimate that fully 50 per cent of all our cases, except juvenile, demonstrate eye pathology and systemic disease of some nature

SURGICAL TECHNIC

It should be remembered that Barraquer emphatically classes his technic and instrument as a method of forceps extraction, i.e., his cannula is used to lift the lens and not to aspirate or suck the lens out. In his article and in his books, published in 1930, 1931 and 1932, he made elaborate physical experiments to demonstrate that his instrument created vibration which ruptured the zonule. In some instances this may occur, but I am not able to substantiate this. In our hands, and as demonstrated to us by other men, the instru-

ment definitely grasps the lens capsule much as other types of forceps such as the Kalt, Knapp and Stachalahou technics, but more efficiently. I observed, in a visit to the Barraquer Clinic in Spain, that he also applied expression or pressure below the lower limbus, pushing upward on the lens, so that the lens fibers are taut, as the vacuum forceps is applied to the capsule. It is here that Barraquer brought out the theory of the vibration on the lens, which made his technic different than the others. Be that as it may, when expression is used to rupture the zonular fibers, the technic is a combined forceps and expression method. The Barraquer technic is highly specialized surgery. The surgeon must have a considerable amount of experience properly to evaluate the percentage of lift, or expression, to be employed to obtain a high percentage of successful intracapsular extractions.

Ramon Castroviejo made the statement to me that the Barraquer instrument was the best means of grasping the lens capsule.[6] We fully agree with him, but this is particularly true in the intumescent lens where the capsule is taut. Other types of forceps will slip off the taut capsule. It is definitely our opinion that in these mature or intumescent lenses, where the capsule is taut or becoming taut, the Barraquer vacuum forceps will grasp the capsule more effectively than any other forceps yet brought to the attention of the profession. The lift on the lens is made forward toward the center of the cornea, while counterpressure is made just below the limbus on the vitreous.

Our entire premise and argument is predicated by the thought that removal of the cataract with the capsule intact is the end to be desired in cataract surgery. It is our contention, after evaluating many thousand cases, that the remote or final visual results obtained by surgical procedures prove the desirability of intracapsular extraction. In the field of immature cataract, and most emphatically in the intumescent type, the Barraquer technic reigns supreme. If it were possible to estimate in advance the strength of the zonule, all types of intracapsular surgery could be greatly simplified by prior planning. However, there is no way of estimating zonular strength. Age, of course, is the best index, but we have seen many cases in elderly patients with mature lenses, where the zonula was very strong. Conversely, we have had numerous young people in whom we would ordinarily expect a very strong zonula, and found one that ruptured easily. Therefore, statements saying that it is advisable to defer surgery to await for ripening and sclerosing of the zonular fibers, making them easy to rupture, have not been proved by my experience, and thus this argument does not justify deferring surgery. It is, however, the only good argument for the delay, but it is definitely not justified. We have seen a tremendous number of cataract cases, particularly those complicated by glaucoma, in which a delay was indirectly the cause of much loss of visual function. Patients, who have been so advised and who are not under the supervision and careful analysis of an ophthalmologist, very often attribute their loss of vision to the lens opacities which they have been advised are developing, but overlook the increase of tension, glaucoma, choroiditis, hemorrhages and other complications. If these complications had been diagnosed and treated, much loss of retinal function could have been prevented. When such neglected cases come up for cataract surgery, they are found to have had retinal complications or glaucoma which preclude them from obtaining good visual results. Early intracapsular surgery is therefore definitely indicated to avoid these complications. It is now our policy to advise the patient that, whenever the cataract interferes with work or produces mental depression, he need not wait for the cataract to become ripe. Surgery can be used any time. The arguments for early surgery greatly overbalance those advising delay. We emphatically believe procrastination is dangerous and decreases the patient's chances of good visual results. This is more especially true in cases demonstrating hypertension or other symptoms of glaucoma. A very difficult diagnostic problem is evaluating loss of vision in cataract complicated by glaucoma and deciding whether or not the glaucoma is primary or secondary. We have repeatedly seen cases that appeared to be primary glaucoma in which, after intracapsular removal of the

opaque lens, glaucoma symptoms disappeared entirely. Cataract complicated by glaucoma is a big problem. The scope of this paper does not permit more to be said except that the two cannot always be evaluated; we therefore more often use the technic which combines surgery directed to the glaucoma as well as lens extraction, as presented in our technic.[7, 8] Briefly, the patients showing non-inflammatory glaucoma symptoms and a partly opaque lens do not obtain the vision they seek when they go to the ophthalmic surgeon and are merely operated on for control of the tension. From our limited experience with the combined surgical procedure, we are inclined to believe, as preliminary conclusions, that surgery for glaucoma and cataract can be combined in selected cases with highly gratifying result. We, of course, readily admit that the successful operations are in early cases, before much loss of retinal function has occurred. Results will certainly be in direct proportion to retinal function. Prognosis must be very guarded in cases of cataract complicated by definite retinopathies.

In other reports we have described our Barraquer technic in detail, so it will not be repeated, except to say that a speculum is employed up to the time of the preliminary stages of the operation, and is removed after the iridectomy and before the cannula is introduced into the anterior chamber. For many years we have favored a keratome incision with an enlargement of the section by scissors. We have, for the past several years, employed it to an increasing extent, and we now follow this keratome incision 100 per cent. When peripheral iridectomy or iridotomy is done, and extraction is to be made through the round pupil, a third suture at 12 o'clock is employed. The technic for known cases of glaucoma, where we are contemplating cyclodialysis or sclerectomy by the Holth punch, the conjunctival flap is made slightly larger.[7, 8] Otherwise, the technic for both procedures is the same. The decision as to whether the cyclodialysis will be employed in a cataract case with hypertension is reserved until after the keratome incision has been made and the first cut of the scissors enlarges the corneal section to about one third of that necessary for a cataract extraction. In cases where we know in advance that they are the narrow angle glaucoma type, or with a history of inflammation or evidence of exudate, we are more and more using our method of cyclodialysis.[8] Whether or not we will use the Holth punch with the sclerectomy is usually planned in advance. If the patient is known to have glaucomatous symptoms, sclerectomy is definitely considered.

The final decision as to whether we will use the Barraquer technic is made after the corneal incision is completed. If the patient is not cooperative and is not calm and quiet on the table, or if bleeding causes doubt in the surgeon's mind at the last moment, as occurs in a few instances, forceps extracapsular surgery is performed. If the lens is intumescent, then certainly the Barraquer forceps is employed. If, by slit lamp, we have previously diagnosed a hypermature cataract (milky white), the Smith method is used. In these cases, the capsule is degenerative and soft and will often rupture if grasped by any forceps. If it does not dislocate readily by a moderate amount of expression pressure, we use the Barraquer forceps with a low vacuum (35–40 mm.) and considerable expression. The capsule is less likely to rupture than with any other forceps we have ever used or have ever seen used.

SUMMARY

Except for juvenile or soft cataract, we believe all cataract patients are given the best chance for fully and permanently restored vision by use of intracapsular surgery. The Barraquer technic is essentially a forceps technic. It grasps the capsule better than any known forceps. It gives the patient the nearest possible chance of good permanent visual results. A 20-year experience with the Barraquer technic convinces us that no other method yet presented to the profession is as efficient in intumescent, unripe cataract. The Barraquer technic is, however, a speciality within a speciality.

RÉSUMÉ

Les cataractes juvéniles ou molles exceptées, la restoration complète et permanente de la

vision est mieux assurée par l'emploi de la chirurgie intracapsulaire. La technique de Barraquer est essentiellement une technique de forceps. Elle offre aux malades de bons résultats visuels permanents. Vingt années d'emploi de cette technique nous ont convaincu qu'aucune autre méthode ne donne des résultats aussi satisfaisants dans les cas de cataractes intumescentes et non mures.

SUMARIO

Excepto para las cataratas juveniles o blandas, creemos que todos los pacientes de cataratas tienen la mejor oportunidad para una total y permanente restauración de la visión por medio de la cirugía intracapsular. La técnica de Barraquer es esencialmente una técnica de forceps. Dicha técnica sujeta la cápsula mejor que cualquiera de los forceps conocidos. Proporciona al paciente la posibilidad más inmediata de una buena y permanente visión. Veinte años de experiencia con la técnica de Barraquer nos ha convencido que ningún otro método ha sido presentado a la profesión tan eficiente en catarates intumescentes y prematuras. La técnica de Barraquer es, de todos modos, una especialidad dentro de una especialidad.

SOMMARIO

Ad eccezione di giovani o molle cataratto, crediamo tutti gl' infermi di cataratto daremo la miglior opportunita per completa e permanente ritorno della vista per uso di intracapsulare operazione. La tecnica Barraquer e essensiale una tecnica forcette. Dara all' infermo l' opportunita piu vicina possibile di buona permanente risultato visuale. 20 anni di esperienza con il Barraquer tecnica convince noi che no altri metodi ancora presentati alla professione, e efficiente in gonfiaato non maturo cataratto. La tecnica Barraquer e in qualunque maniera, una specialita dentro una specialita.

Свод.

Мы думаем, что за исключением молодой или мягкой катаракты, наилучший шанс на полное и постоянное восстановление зрения создается применением интракапсулярной хирургии. Методика Барракера это существенно пинцетная методика. Она дает больному наибольший возможный шанс на получение перманентных зрительных результатов. 20-летний опыт в этой методике убедил нас, что никакой до сих пор предложенный способ не является настолько эффективным, особенно, при растущей несозрелой катаракте. Но методика Барракера является специальностью в специальности.

BIBLIOGRAPHY

1. Wolfe, O. R., Intracapsular Extraction of Cataract by the Barraquer Method, J. Iowa M. Soc., November, 1925.
2. Wolfe, O. R., The Barraquer Cataract Operation (Modified), Tr. 35th Ann. Meet., Am. Acad. Ophth., Chicago, Oct. 27–31, 1930.
3. Wolfe, O. R., Barraquer Cataract Operation, Am. J. Ophth. **14**:6, June, 1931.
4. Kirby, D. B., Procedures in Intracapsular Cataract Extraction, Am. J. Ophth. **25**:269–277, March, 1942.
5. Wolfe, O., and Wolfe, R. M., Cataract Surgery in Children and Young Adults, Eye, Ear, Nose & Throat Monthly **22**:183–188, May, 1943.
6. Personal Communication.
7. Wolfe, O., and Wolfe, R. M., Barraquer Technic in Incipient Cataract and Glaucoma, J. Internat. Coll. Surgeons **6**:354–360, July–Aug., 1943.
8. Wolfe, O. R.; Wolfe, O. D., and Wolfe, R. M., Cyclodialysis in Combined Glaucoma and Cataract Surgery, Eye, Ear, Nose & Throat Monthly **25**:195–198, April, 1946.

THE TWELFTH NATIONAL ASSEMBLY AND CONVOCATION
of the United States Chapter
September 28 to October 4, 1947, Chicago
FOR HOTEL RESERVATIONS WRITE TO
Dr. Francis D. Wolfe, Housing Chairman, I.C.S.
c/o Chicago Convention Bureau, 33 North LaSalle St.
Chicago, Illinois.

Malignant Disease of the Thyroid Gland*

ROBERTSON WARD, M.D., F.A.C.S., F.I.C.S.†
SAN FRANCISCO, CALIFORNIA

IT would appear that surgical treatment of thyroid disease is destined to become increasingly concerned with malignant goiter. As toxic diffuse (exophthalmic) goiter becomes better understood, its treatment will tend to move more and more out of the realm of surgery. This trend has shown a pronounced acceleration in recent years with the advent of iodine therapy as proposed by Plummer, efficient deep radiation therapy, thiouracil and, most recently, radioactive iodine. Further knowledge of its etiology and hormonal relations may remove hyperplastic goiter entirely from the field of surgery. Therefore it is timely to review the subject of malignant goiter in its relation to the entire field of thyroid surgery, in order to emphasize its intimate relation to nodular goiter, especially the nontoxic variety. In this connection it is of more than passing interest to point out that treatment with radioactive iodine offers little encouragement in the management of malignant goiter. This is shown by autoradiographs, which usually demonstrate that malignant tissue picks up minimal amounts of radioactive iodine.

The material upon which this study is based consists of 179 cases of cancer of the thyroid from the Surgical Service of the University of California Hospital and my private practice. A continuous personal follow-up has been carried out to 1946, so that some patients have been under observation for more than 20 years. This long duration of follow-up has emphasized the inadequacy of studies based on a mere five-year survival.

The problem of malignant disease of the thyroid gland is the problem of nodular goiter. In this entire series were found only three definite instances of malignancy associated with a true exophthalmic goiter. Goetsch,[1] who reported eight carcinomas in exophthalmic goiter, reached the conclusion that "carcinoma is rarely, if ever, primary in the hyperplastic gland." He felt that those neoplasms which appeared primary were probably secondary to malignant degeneration of minute adenomas. I agree with Goetsch, and further feel that many of these minute carcinomas found in exophthalmic goiters are incidental pathologic findings of the type described by Graham,[2] who stated that in none of his cases of this type had malignancy recurred or the patient succumbed to the disease. The point worthy of emphasis is that nodular goiter is the breeding ground of malignancy; that nodular goiter must arouse suspicion not only because it is the breeding ground but because almost all carcinomas of the thyroid, which are in any way amenable to treatment, grow in nodular form and are bosselated or nodular in appearance and to palpation.

If, then, toxic diffuse goiter can be eliminated from consideration, and if we are to make progress in early diagnosis and treatment, our attention must be focused upon segregation of the remaining nodular goiters into the varieties which demand early operation. This is the field in which prolonged follow-up and statistical analysis are most valuable. They have indicated that in the following groups early operation offers the only real hope for adequate treatment leading to cure.

The first of these is solitary adenomas, especially the nontoxic variety. Cole[3] and his coworkers have shown an incidence of 24 per cent malignancy rate in 92 patients with

* Read at the Eleventh National Assembly, U. S. Chapter, International College of Surgeons, Detroit, Michigan, Oct. 22, 1946.
† From the Department of Surgery, University of California Medical School.

solitary nontoxic adenomas. A recent careful analysis [4] of 100 solitary nontoxic nodules in our clinic showed 14 per cent to be definitely malignant and an additional 37 per cent to be benign neoplasms (Table 1). Until clinical indications of early malignancy are established, the only safe procedure is to recommend radical lobectomy in this condition which carries 14–24 per cent expectation of malignancy.

TABLE 1

Malignancy in Solitary Adenomas

Origin of Material	Number of Cases	Malignant Number	Malignant Per Cent
Chicago (Cole) Nontoxic	92	22	24
Univ. of Calif. Nontoxic	100	14	14

The second group in which surgery is indicated is male patients with nodular goiter. Our statistics show that for the entire period of study the cancer rate in men with nodular goiter has been 12 per cent. In recent years this ratio has tended to increase so that the latest review of my private series, excluding cases reviewed in the University of California series, shows that there have been 5 malignancies in 30 male patients with nodular goiter, a rate of 1:6 or 16.6 per cent (Table 2).

TABLE 2

Malignancy in Nodular Goiter
(Incidence by Sex)
1946

Sex	Nodular Goiters	Malignant Number	Malignant Per Cent
Female, U. C.	3,268	113	3.4
Male, U. C.	324	39	12.0
Total, U. C.	3,592	152	4.2
Private Service, Males	30	5	16.6

There is a third group which should come under the care of the surgeon on statistical as well as clinical grounds. I refer to children with nodular goiter. It is dangerous to draw statistical conclusions from small numbers such as are found in any series. However, Kennedy [5] has shown that 12 of 62 nodular goiters found in patients under the age of 15 were malignant. This represents more than 19 per cent in a region of fairly severe endemicity. The figures for the University of California Hospital, located in a region where endemic goiter in children is rare, show that 40 per cent of the 10 children under 15 operated upon for nodular goiter had carcinomas. If these figures were extended to include the age of 19, the rate would still be more than 17 per cent (Table 3).

TABLE 3

Nodular Goiter in Children

Origin of Material	Nodular Goiter	Malignant Number	Malignant Per Cent
Rochester, Kennedy Under age 15	62	12	19.3
University of California Under age 15	10	4	40.0
Under age 20	58	10	17.2

Recommendation for surgery in the above three groups is based almost entirely on statistical reasons. Possibly it is redundant to emphasize the necessity for operation in that class of nodular goiters, in which recent growth or pressure symptoms have developed in long-standing goiters. Any findings indicating change in the character of the growth are to be considered indications for operation. It is quite understandable, however, that carcinomas found in patients who have developed pressure symptoms will include a more advanced group than those coming to surgery upon a statistical basis.

Lateral aberrant thyroid nodules are an inseparable part of the malignant goiter problem. Opinion of investigators of this subject varies from consideration of all such tumors as metastases from a primary neoplasm of the homolateral lobe of the thyroid gland [6] to fetal rests having low or potential malignancy.[7] I reported 15 cases,[8] of which 13 were considered either definitely malignant or as having distinct malignant potentialities. Regardless of the theoretical consideration of origin of aberrant lateral nodules, there is a

very practical aspect bearing upon their curability. Most surgeons are agreed that such deposits are malignant or potentially malignant and should be removed by block dissection, including the homolateral lobe of the thyroid. The time for cure is at the first operation. Whether or not postoperative radiation should be carried out depends upon the presence and degree of malignancy shown by microscopic examination. The papillary design of many of these tumors predicts a good response to roentgen therapy.

Just as a 20 year follow-up teaches many lessons from a statistical point of view, an equally long experience in the surgical management of these cases leads to definite impressions as to how they should be treated. One problem which formerly confronted us was the finding of a totally unsuspected malignancy by the pathologist in what was thought to be a benign goiter. Upon two occasions in our series this led to an immediate secondary operation for complete removal of any remaining, possibly involved tissue. Both of these patients are well 17 years after operation. This problem has now solved itself in two ways. First, we are more suspicious of these tumors from the start, and the discovery of malignancy does not and should not come as a surprise; and second, we have largely abandoned the practice of enucleation of adenomas. It is now my practice to perform a subtotal lobectomy for all solitary tumors, in all nodular goiters in males and children, and in general to avoid enucleation of adenomas. By following such a practice one is relieved of that perplexing decision as to the necessity of a secondary operation when malignancy is found by the pathologist.

A second perplexing question is the decision to give or withhold postoperative radiation therapy. Our experience has shown that tumors predominantly of the papillary design respond well to radiation either by becoming completely arrested or by remaining dormant for long periods. Since adequate radiation by modern technic entails no little discomfort and morbidity, one hesitates to prescribe it for the tumors found by the pathologist to be confined by the capsule of the adenoma of origin. Although postoperative radiation is generally advocated for all malignant goiters, it has been my practice in recent years to base the decision in each case on microscopic findings as to its type and degree of malignancy. In many of these cases radiation therapy has been withheld pending the advent of recurrence or has been used only for metastases in distant regions. King [9] has recently discussed this plan of procedure and reported cure without radiation in 35 patients with encapsulated carcinomas. Despite the fact that most undifferentiated and diffuse carcinomas are not cured or even temporarily arrested by radiation therapy, many lives have been prolonged and apparent cures obtained after recurrence has taken place in patients with tumors of papillary design. As pointed out previously (Ward [10]), the evaluation of radiation therapy is difficult and can be estimated accurately only in cases where it is used as the only treatment for recurrent carcinoma. We have such instances where radiation alone controlled growth and maintained patients in reasonably good health for as long as 11 years after postoperative recurrence. In reaching a decision as to its use in the individual patient, I would say that it should probably be given in all cases where there is reasonable doubt concerning the complete removal of neoplastic tissue. It is likely to be effective, however, only in the tumors of predominantly papillary design.

The problem of locally recurrent nodules should be answered by repeated operations for their removal. Graham [11] has shown that many of these are tumor thrombi in the proximal stumps of veins. These nodules are particularly resistant to irradiation for two reasons: (1) they are surrounded by a venous capsule, and (2) the type of malignant adenoma which spreads by vein is not of the papillary design and therefore less sensitive to irradiation.

There are a few points in the surgical management which I have found of value. First, if one knows or suspects that the goiter is malignant, it is advisable to have an intratracheal tube inserted regardless of the type of anesthesia. Intravenous sodium pentothal with oxygen administration is my preference for anesthesia at the present time. This may

be reenforced with local infiltration of procain or by nitrous oxide, if the occasion requires. The use of inflammable gases is precluded by my dependence on the electrical knife and electrocoagulation.

The collar incision should be longer and probably a little higher than in the usual goiter operation, and a hockey-stick extension upward may facilitate removal of submandibular deposits. After dissection of the flaps the ribbon muscles should be cut or, if adherent or infiltrated, left attached to the anterior surface of the tumor. It is of tremendous advantage if the inferior thyroid arteries can be isolated and ligated at some distance from the gland in the manner advocated by de Quervain.[12] If further hemostasis can be obtained by upper polar ligation as well it will facilitate the procedure. Adequate exposure may be the deciding factor in successful removal of the tumor.

If the usual substernal extension is found, it is essential to free the upper portion of the thyroid first in order to use that portion of the gland as a handle for extraction of the substernal portion by upward traction. Location of the trachea is made easier by the presence of the intratracheal tube, and often splitting of the isthmus facilitates dissection of carcinoma from the tracheal fascia. It has been my practice to carry out this dissection with the electric knife, removing infiltrated carcinoma flush with the tracheal wall. Occasionally light surface coagulation of the tracheal tissue infiltrated by carcinoma is indicated. Careful exploration of the superior mediastinum, the retrotracheal area and all venous channels leading from the gland should be made. When tumor thrombus is demonstrable in the lateral veins, sacrifice of the deep jugular vein is indicated. Lateral metastatic deposits are searched for, and removed by block dissection if found. In these cases it is advisable to ligate the jugular vein at its most proximal available point and carry the dissection upward from there.

I have not hesitated to sacrifice one recurrent laryngeal nerve if it is found to be actually imbedded in malignant tissue. I feel it is most important to remove the bulk of malignant growth, especially in the papillary type of tumor in which postoperative radiation may be expected to cause extensive necrosis. X-ray therapy of bulky papillary tumors may cause sloughing so extensive as to leave the patient in a pitiable condition. Use of the radio knife or loop as advocated by Tinker[13] is the only possible method of carrying out this procedure in many cases. I have implanted radon seeds in irremovable tissue upon only two occasions, but I feel that it is a sound surgical procedure when it can be accomplished without danger of radiation necrosis of the tracheal cartilages and large vessels.

SUMMARY

Malignant goiter seems destined to become an increasing problem of surgery of the thyroid gland. As toxic diffuse (exophthalmic) goiter is better understood, it may well be eliminated from the field of surgery. If thyroidectomy of the future thus becomes limited to nodular goiter, the relative rate of malignancy will thereby be doubled.

All nodular goiters should fall under suspicion as the origin of malignancy. If carcinoma of the thyroid is to be recognized early and treated adequately, three groups of nodular goiters should be considered surgical from the outset. These are solitary tumors of the thyroid, all nodular goiters in males and nodular goiters in children under the age of puberty. The incidence of malignancy in these three groups has been shown by this and other studies to be between 12 and 24 per cent.

A plea is made for the abandonment of enucleation as a surgical procedure in solitary adenomas and its less frequent use in multinodular goiters. Homolateral lobectomy is advocated in the block dissection used for removal of lateral aberrant thyroid tumors.

SOMMAIRE

Les tumeurs malignes de la glande thyroïde constituent un problème de plus eu plus important de la chirurgie de la glande thyroïde. Le goître exophthalmique est mieux compris. Les tumeurs malignes de la glande thyroïde et le goître nodulaire sont d'une fréquence qui commande l'intérêt.

Tout goître nodulex peut devenir la source de tumeur maligne. Si le carcinome de la glande thyroïde doit être traité précocement et suffisamment, trois groupes de goître nodulaires demandent un traitement chirurgical précoce et radical. Ces groupes sont toutes les tumeurs solitaires de la glande thyroïde, tous les goîtres nodulaires chez le male et les goîtres nodulaires chez les enfants n'ayant pas atteint la puberté. Les tumeurs malignes de ces trois groupes constituent de 12 à 24 pour cent des tumeurs nodulaires.

L'auteur demande qu'on abandonne l'énucléation des adénomes solitaires et son emploi moins fréquent dans les goîtres multinodulaires. Il préconise la lobectomie homolatérale, et l'ablation des tumeurs thyroïdiennes aberrantes laterales.

SOMMARIO

Il gozza maligno sembra destinato a diventare un maggiore problema di chirurgia della glandula tiroide come il gozzo diffuso di tossico (essatomico) viene meglio compreso, verra eliminato dal campo chirurgico. Se il tiroidectomi del futuro divento limitato al gozzo nodulare, la rata relativa di malignita verra raddoppiata.

Tuti i gozzi nodulari debbono essere sospetti come origine di malignita. Se carcinoma della tiroide dene essere riconosciuta, da principio e curata competentemente, tre gruppi di gozzi nodulari debbano considerarsi chirurgici sin dal principio. Questi sono tumori solitari della tiroide, tutti i gozzi nodulari nei maschi e gozzi nodulare nei fanciulli prima dell' eta della puberta. L' occasione de malignita in questi tre gruppi e stata mostrata da questo ed altri studii essere tra il 12 ed il 24 per cento.

E' stato chiesto l' abbandono della enucleazione come procedura chirurgica negli adenoma solitari ed il suo meno frequente uso nei gozzi moltinodulari. Viene incoraggiata di togliere tutta la glandula nei tumori della tiroide.

SUMARIO

La papera maligna parece destinada a convertirse en un problema creciente de la cirugía de la glándula tiroides. La papera es mejor conocida como tóxico difuso (exofatálmica) y puede muy bien eliminarse del campo de la cirugía. Si la tiroidectomía del futuro se limita así a la papera nodular, la relativa proporción de malignidad será doblada de ese modo.

Todas las paperas nodulares caerán bajo la sospecha de ser de origen maligno. Si el carcinoma del tiroide se reconoce prontamente y se trata como es debido, tres grupos de paperas nodulares se considerarán de intervención quirúrgica desde el comienzo. Hay tumores solitarios del tiroides, todos paperas nodulares en el varón, y paperas nodulares en los niños que en la pubertad. La incidencia de la malignidad en esos tres grupos ha sido probada por este y otros estudios próximos; entre un 12 y un 20 por ciento de los casos.

Se hace un llamamiento para el abandono de la extracción como medida quirúrgica en los adenomas solitarios y por el uso menos frecuente en las paperas multinodulares. La lobectomía homolateral es preferible para la disección en bloque usada en la remoción de los tumores tiroides anómalos laterales.

Свод

Кажется, что злокачественному зобу суждено сделаться ростущей задачей хирургии щитовидной железы. С ростущим пониманием токсического дифузного (эксофтальмического) зоба его будет возможно совершенно исключить из поля хирургии. Если тироидэктомия в будущем будет применяться только при нодюлярном зобе, то относительная частота злокачественности удвоится.

Все нодюлярные зобы должны быть заподозрены, как злокачественные. Если щитовидный рак должен быть рано распознан и дан адэкватное лечение, то три группы нодюлярных зобов должны быть считаться хирургическими с самого начала: одиночные щитовидные опухоли, все нодюлярные зобы у мужчин и нодюлярные зобы детей до половой зрелости. Это и другие исследования показывают, что в этих трех группах злокачественность присутствует в 12-24%.

Автор выражает призыв совершенно оставить вылущивание, как хирургическую меру, при одиночных аденомах, и его более редкое применение при множественных нодюлярных зобах. Рекомен-

(Continued on page 411)

Primary Splenic Neutropenia Cured by Splenectomy

Report of a Case

EARL D. McCLEAN, M.D., A.I.C.S.
AND
FRANCIS C. COLEMAN, M.D.*
DES MOINES, IOWA

CASE reports of primary splenic neutropenia, first described by Wiseman and Doan [10] in 1942, have not been frequent. We have recently had the opportunity of observing a young woman whose physical findings, blood picture and response to splenectomy seem to meet the criteria laid down by Wiseman and Doan in their original description. These are "profound granulopenia, panhyperplasia of the marrow and splenomegaly with splenectomy curative."

CASE REPORT

Mrs. S. J., a white housewife, 29 years of age, mother of two children, aged 4 and 1½ years, was first seen on Nov. 8, 1945. At that time she had a severe sore throat covered by a pseudomembrane, which involved first the right side of the throat and five days later spread to the left side. Sulfamerazine was given but had no effect after 36 hours of administration. The drug was discontinued, and the sore throat gradually improved. On Dec. 16, 1945, she was again seen with thrombosed hemorrhoids which had prolapsed in cluster form. These were very painful, of a dark blue color and could not be reduced. She was hospitalized on Dec. 21, 1945. At this time sore throat was again present.

Two years previously the patient had had a similar episode of severe sore throat which had followed a tooth extraction. At that time her white blood count was said to be low and she was told that she had leukemia. No other attacks of sore throat had been present during the two year interval, but she had noted mild swelling of the ankle, occasional cyanosis of the finger nails and a constant tired feeling. During the year prior to admission, she had had arthritis of a migratory type which was treated by injections of typhoid vaccines. Her menstrual cycle had been regular and the flow normal in amount. She gave no history of malaria and had not been taking amidopyrine or other drugs derived from coal tar.

On admission to Mercy Hospital on Dec. 21, 1945, the temperature was 101 F., pulse rate 90, respirations 20 per minute and blood pressure 88/58. She was emaciated, and the skin was pale with a yellowish tint. Mild tenderness was present in the upper left quadrant of the abdomen. The spleen was enlarged, extending downward 8 cm. below the left costal arch.

TABLE 1

WHITE BLOOD COUNTS

Date	*White Blood Count*	*Neutrophils*
11–27–45	5,800	..
12–22–45	1,700	14
1– 2–46	2,000	25
1– 6–46	1,650	15
	(Surgery)	
1–10–46	3,050	40
1–11–46	7,150	..
1–18–46	7,200	..
2–18–46	7,400	65
4– 5–46	8,800	67

On Dec. 22, 1945, the total white count was 1,700 with 14 neutrophils, 8 large lymphocytes and 1 monocyte. There were 125,000 platelets. The bone marrow was hyperplastic with an arrest at the myelocytic level, the myelocytes being chiefly type C. Another bone marrow study on Jan. 3, 1946, showed the same picture. A splenectomy was decided upon. An effort was made to improve the blood picture with transfusions preoperatively, six indirect whole blood transfusions of 500 cc. each being given between Dec. 23 and Jan. 8. Only a transitory increase in the total white count was obtained.

On Jan. 9 a splenectomy was performed under combination spinal and ethylene anesthesia. The

* From the Departments of Surgery and Pathology, Mercy Hospital, Des Moines.

liver appeared normal. The spleen weighed 1,010 Gm. Its outer surface was bluish red, and no adhesions were present. The cut surface was relatively avascular.

The postoperative course was uneventful and the patient was discharged on the eighth postoperative day. Arthritic symptoms were present until Mar. 1, when they disappeared after repeated intravenous injections of triple typhoid vaccine and prostigmine by mouth; they had not reappeared by June 1, 1946. Her weight on leaving the hospital was 104 lb. and by June 1, 1946, had risen to 122 lb. She is now doing all of her housework and is symptom-free.

The blood picture on Dec. 22, 1945, showed a depression of granulocytes, red cells and platelets in the peripheral blood associated with a hyperplasia of all elements of the marrow.

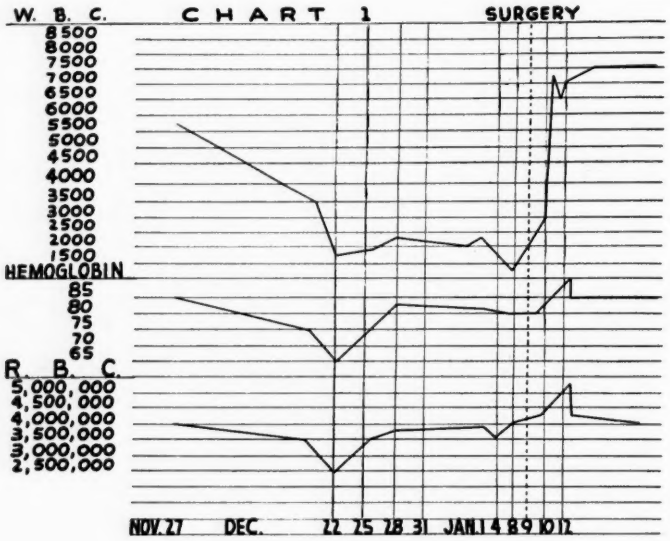


Fig. 1.—Peripheral blood response to splenectomy.

The absence of a history of ingestion of amidopyrine or similar compounds and the history of previous episodes of sore throat led us to believe that we were not dealing with a malignant neutropenia, although hyperplasia of the marrow is sometimes seen in this condition. The normal appearance of the liver did not suggest Banti's syndrome. The presence of the arthritic symptoms made us think of Felty's syndrome, although reports in the literature suggest that in this syndrome the marrow is as a rule not hyperplastic. The arthritis did clear up six weeks after splenectomy, but intensive postoperative treatment was given for the arthritis so that it is difficult to evaluate the role played by the splenectomy in the disappearance of the arthritic symptoms.

This case seems to be one of hypersplenism. Whether the mechanism is one of increased phagocytosis or a maturation arrest through some means not yet understood is not clear. We believe from our experience with this case that splenectomy is indicated in those patients with marked granulopenia who have an idiopathic splenomegaly and in whom panhyperplasia of the bone marrow is present.

SUMMARY

A case of primary splenic neutropenia in a 29 year old white woman, which was cured by splenectomy, is presented.

RÉSUMÉ

Un cas de neutropénie splénique chez une femme blanche, âgée de 29 ans, est présenté. La guérison complète suivit l'opération.

SOMMARIO

Un caso primario di neutropenia della milza in una donna bianca all' eta di 29 anni, e stata curata per rimozione chirurgica della milza.

SUMARIO

Se presenta un caso de una neutropenia esplénica primaria en una mujer de 29 años de edad, y que fué curado por medio de la esplenicoromia.

Свод.

Доложен случай первичной селезеночной нейтропении у белой женщины 29 лет, которая была вылечена удалением селезенки.

BIBLIOGRAPHY

1. Cuger, C.; Jobin, J. B., and Larochele, L. N., Subacute Neutropenia Treated by Splenectomy, Canad. M. A. J. **53**:335, 1945.
2. Felty, A. R., Chronic Arthritis in the Adult, Associated with Splenomegaly and Leucopenia, Bull. Johns Hopkins Hosp. **35**:16, 1924.
3. Hanrahan, E. M., and Miller, S. R., Effect of Splenectomy in Felty's Syndrome, J. A. M. A. **99**:1247, 1932.
4. Kinsey, H. I., and Bingham, J. R., Primary Splenic Neutropenia, Canad. M. A. J. **55**:291, September, 1946.
5. Moore, C. V., and Bierbaum, O. S., Chronic Neutropenia Treated by Splenectomy, New Internat'l Clin. III:87, 1939.
6. Muether, R. O.; Moore, L. T.; Stewart, J. W., and Broun, G. O., Chronic Granulocytopenia Caused by Excessive Splenic Lysis of Granulocytes, J. A. M. A. **116**:2255, 1941.
7. Price, A. E., and Schoenfeld, J. B., Felty's Syndrome, Ann. Int. Med. **7**:1230, 1934.
8. Salzer, M.; Ransohoff, J. L., and Blatt, H., Primary Splenic Neutropenia with Report of a Case, Ann. Int. Med. **22**:271, 1945.
9. Wiseman, B. K., and Doan, C. A., A Newly Recognized Granulopenic Syndrome Caused by Excessive Splenic Leukolysis Treated by Splenectomy, J. Clin. Investigation **18**:473, 1939.
10. Wiseman, B. K., and Doan, C. A., Primary Splenic Neutropenia; a Newly Recognized Syndrome Closely Related to Congenital Hemolytic Icterus and Essential Thrombocytopenic Purpura, Ann. Int. Med. **16**:1097, 1942.

MALIGNANT DISEASE OF THYROID GLAND

(Continued from page 408)

дуется односторонняя лобэктомия при блоковой диссекции, применяемой при удалении латеральных блуждающих щитовидных опухолей.

BIBLIOGRAPHY

1. Goetsch, Emil, Incipient Carcinoma Occurring in Exophthalmic Goiter and Originating in Adenoma, Tr. Am. A. Study Goiter, p. 191, 1940.
2. Graham, A., The Malignant Goiter, Proc. Interstate Post. Grad. Assmbl., p. 264–269, 1927.
3. Cole, W. H., Slaughter, D. P., and Rossiter, L. J., Potential Danger of Nontoxic Nodular Goiter, J. A. M. A. **127**:883–888, Apr. 7, 1945.
4. Soley, M. H., Lindsey, S., and Dailey, M. E., The Clinical Significance of a Solitary Nodule in the Thyroid, to be submitted for publication.
5. Kennedy, R. L., Nodular Goiter among Infants and Children, Tr. Am. A. Study Goiter, p. 322–326, 1940.
6. King, W. L. M., and Pemberton, J. deJ., So-Called Lateral Aberrant Thyroid Tumors, Tr. Am. A. Study Goiter, p. 177–195, 1941.
7. Crile, G. W. Jr., Papillary Tumors of Thyroid and Lateral Aberrant Thyroid Origin, Surg., Gynec. & Obst. **69**:39–47, 1939.
8. Ward, R., Relation of Tumors of Lateral Aberrant Thyroid Tissue to Malignant Disease of the Thyroid Gland, Arch. Surg. **40**:606–645, 1940.
9. King, B., discussion, ref. # 3.
10. Ward, R., Malignant Goiter, Surgery **16**:783–803, 1944.
11. Graham, A., Malignant Adenoma of the Thyroid; Local Recurrence in Veins of the Neck, Tr. Am. A. Study Goiter, p. 19–40, 1937.
12. de Quervain, F., and Curtis, G. M., The Operative Treatment of Goiter, Surg., Gynec. & Obst. **43**:498–503, 1926.
13. Tinker, M. B., Electro-Surgery with Special Reference to Goiter and Malignancy, Ann. Surg. **94**:587–591, October, 1931.

Fractures of the Neck of the Femur

OTHO C. HUDSON, M.D., F.A.C.S., F.I.C.S.
HEMPSTEAD, NEW YORK

FRACTURES of the neck of the femur are still called "the unsolved fracture." In all discussions on the treatment and end results, no description of the types of fractures occurring in the cervical portion of the femur is made.

In a review of our earlier failures and an analysis of the x-rays of these cases, we feel that many of the cases that develop nonunion can be prognosticated on the original x-ray. By subdivision of the fractures occurring in the femoral neck into types and varying the treatment to suit the type, we have greatly reduced our nonunions and failures.

The types of fractures of the femoral neck are:

(1) Transverse subcapital
(2) Transverse through middle of neck
(3) Base of neck
(4) Oblique of femoral neck
(5) Comminuted of femoral neck
(6) Oblique comminuted of femoral neck

The same type of treatment is not applicable to all of these types.

The oblique, comminuted and oblique comminuted fractures may be fixed by internal methods, but do not hold until bony union occurs. These fractures gave us 16 per cent of our nonunions. We changed our method of treatment for these acute fractures to a McMurray osteotomy. The transverse subcapital and transverse through the middle of the neck can be fixed by internal methods and maintained until bony union occurs. The base neck fractures can be fixed by use of an angle plate and maintained until bony union occurs.

TABLE 1

Type of Fracture (X-Ray)	Treatment of Choice (Acute Fracture)
Transverse neck	Internal fixation, Smith-Peterson nail, screws, etc.
Transverse subcapital neck	Internal fixation, Smith-Peterson nail, screws, etc.
Base neck	Angle plate fixation
Oblique neck	McMurray osteotomy

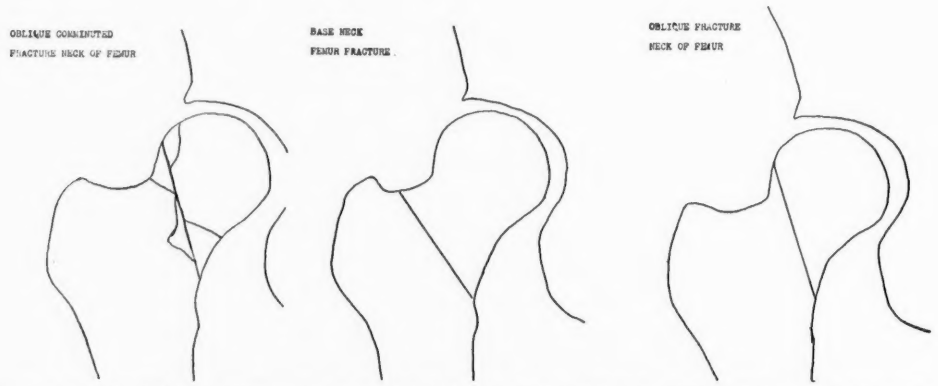


Fig. 1 *(left)*.—Oblique comminuted fracture of femur neck. Fig. 2 *(center)*.—Fracture of base neck of femur. Fig. 3 *(right)*.—Oblique fracture of neck of femur.

TABLE 1 CONTINUED

Comminuted neck	McMurray osteotomy
Any type (very aged patient)	Removal of head of femur

The very aged patient who has been bedridden for months and falls out of bed, and the very aged patient who is debilitated, should be classed separately for treatment. In this group the possibility of recovery and usefulness of the leg is doubtful. These patients should be treated to relieve the pain. This can be done by removal of the head of the femur and the portion of the neck attached. No attempt need be made to put the trochanter into the acetabulum. The patient now has no fracture, no pain from the fracture and can be treated as desired.

Fig. 4.—Transverse fracture of neck of femur.

TABLE 2

Treatment (Acute Case)

	Smith-Peterson Nail	Angle Plate	Osteotomy	Removal of Head
1942	22	1	5	2
1943	20	2	6	0
1944	18	2	11	1
1945	20	1	11	2
1946	18	2	13	5

We have been using this classification and method of treatment for fractures of the neck of the femur for over five years with excellent satisfaction. Our nonunions and reoperations have been reduced to a minimum.

Smith-Peterson nailing failures are due to internal fixation of cases with oblique and comminuted fractures of the neck of the femur. These cases should be treated by osteotomy in the beginning. Osteotomy failures are due to (1) long spiral bony spicules on the distal fragment so that medial displacement cannot be obtained and (2) inadequate period of fixation, so that the distal fragment slips posteriorly before solid union occurs.

Fig. 5.—Subcapital transverse fracture of femur neck.

TABLE 3

Treatment (Secondary)

	Smith-Peterson Nail Failures	Osteotomy Failures
1942	4—2 osteotomy	2—1 reoperation; satisfactory
	2 unknown	1 unknown
1943	4—1 osteotomy	2 unknown
	3 unknown	
1944	4—1 nonunion still (pain)	1 reoperation, satisfactory
	1 osteotomy	
	2 unknown	
1945	1— osteotomy	1 reoperation, satisfactory
1946	2— osteotomy	0

Carcinoma of the Rectum in Youth

With a Case Report

JAS. HERBERT WILKERSON, M.D.
BALTIMORE, MARYLAND

CASE REPORT

Claire B, 15 years old, white, entered the Maryland General Hospital in October, 1943, with a history of nausea and vomiting, elevated temperature and diarrhea for three weeks. The past history showed that she had first consulted a doctor six months prior to admission for bleeding from the rectum. She was not examined at that time, but she received some medicine to stop the bleeding. Following this, the patient had intermittent attacks of fever and diarrhea. She was seen by another physician who administered sulfa drugs. She began to lose weight in the last six weeks and was sent to the hospital.

Physical examination at that time revealed an alert, bright girl. She showed evidence of weight loss, her weight being 100 lb., and some anemia. Abdominal examination revealed no palpable masses. The liver was not enlarged. In both groins lymph glands were palpable. The vaginal outlet showed a small perforated hymen without abnormality. Rectal examination, in the knee-chest position, showed a large, irregular mass, quite friable, on the posterior wall of the rectum, 5–6 in. from the anal margin. The mass was 4–5 in. long and 2 in. wide. It was quite vascular, and portions of it came away on the examining glove.

Microscopic examination of the tissue revealed adenocarcinoma. Blood examination revealed a negative Wassermann, with anemia and three and a half million red cell count. Blood chemistries were negative. The barium enema showed a large filling defect in the lower part of the rectum, to the right of the midline. The balance of the colon was normal in outline. The filling defect strongly suggested the presence of a malignant growth. A lymph gland was removed from each groin under local anesthesia; microscopic section revealed no evidence of malignant cells. An abdominoperineal resection seemed advisable. Other surgical consultation was wanted by the parents before operation. One surgeon was of the opinion that the condition was probably inoperable. Another surgeon believed that the growth was resectable. The parents consented to an operation.

Operation.—The patient was given a course of sulfasuxidine for six days prior to operation. A blood transfusion was also given during the preparation period. At the time of operation, a catheter was placed in the bladder and left intact during the operation. Under general anesthesia, a left rectus incision was made. The liver was palpated carefully and found to contain no metastases. The mass was palpated in the rectum and found to be about 4½ in. long, 2½ in. wide and 1 in. thick. The rectum and mass were adherent to the posterior surface of the uterus but could be separated from it, and was otherwise fairly movable. There were no peritoneal implants. There were some palpable pelvic nodes, but none above this level. The patient was placed in the Trendelenburg position, and the small bowel and cecum were held in the upper abdomen by large, wet salt pads. The sigmoid was then mobilized by severing its lateral attachment in the left iliac fossa. The sigmoid was turned to the midline and the ovarian vessels identified; back of this, the left ureter was picked up and a piece of tape placed under it. It was then pulled to the left and freely mobilized. The lateral fold of peritoneum, running from the pelvic wall to the rectum, was incised as low as possible to the posterior vaginal wall. An opening was made into the mesentery near the colon, and a piece of gauze placed through it. The sigmoid was now freely movable, and the vessels could be seen clearly. The right ureter was identified, but not disturbed. The parietal peritoneum over the mesenteric root and the rectum was incised and dissected downward to the posterior vaginal wall. The same procedure was carried out on the left and the two joined across the posterior vaginal wall. The rectum was now completely separated from its parietal peritoneal attachment. The rectum and its mesentery were then separated from the sacrum and coccyx down to its tip by use of the gloved hand. The anterior wall of the rectum was separated from the posterior vaginal

Fig. 1.—Film showing filling defect in rectum following barium enema.

Fig. 2.—Specimen removed at operation showing extensive ulcerative, carcinomatous growth of rectum.

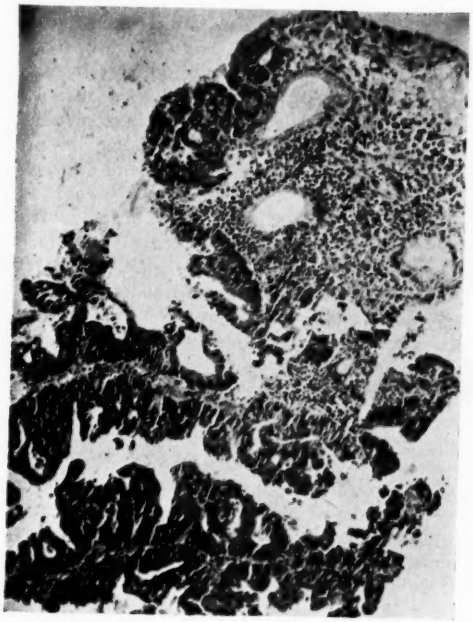


Fig. 3.—Microscopic appearance of adenocarcinoma of rectum, Grade 3 (Broder's classification).

wall. The rectum was pulled to the right, and the left lateral attachment separated. The same was done on the right side. The middle hemorrhoidal vessels were tied on either side. The bowel was then held up and the inferior mesenteric artery found and doubly ligated with chromic catgut. The mesentery was excised from the promontory of the sacrum upward and left attached to the bowel. A McBurney incision was made in the left iliac region separating the external oblique aponeurosis longitudinally, then the internal oblique and transversalis transversely. The peritoneum was opened. A Zachary Cope clamp was applied to the bowel at the junction of the colon and sigmoid, and the bowel divided with cautery. The proximal loop, with one of the clamps attached, was brought through the left McBurney incision, and a few appendices epiploica were tied above the peritoneum with free ties. Vaseline gauze was placed about the bowel. The lower portion of bowel, with the other portion of the Cope clamp, was placed into the pelvis with the clamp part first and lying in front of the coccyx. The reflected fold of peritoneum over the broad ligament was dissected laterally on either side and grasped with clamps. A new pelvic diaphragm was made with these flaps of peritoneum with chromic catgut sutures. The peritoneum and muscles were closed with plain catgut, the fascia with chromic catgut and the skin with silk. A few skin sutures were placed in the left McBurney wound about the colostomized bowel. No sutures were placed in the bowel itself. The patient was then placed on the left side, the buttocks separated and the perineal area cleansed with soap, ether and antiseptic. A purse-string suture was placed in the anal canal and tied tightly. An incision was made in front of the coccyx and extended down to encircle the anus to a point just behind the vagina. The lateral incision was made deeper until the pelvic fascia was reached; this was incised. The levators were then severed on either side, and the rectum with the Cope clamp grasped and pulled down into the wound. The rectum was separated from the vagina by wiping with gauze. The remaining levator attachments were severed, and care was taken not to enter the vagina. Oozing vessels were tied and hot salt pack applied. A piece of rubber-dam was impregnated with gauze and placed in the perineal wound and dressing applied. During the course of the operation, a transfusion was given.

Postoperative Care.—The perineal pack was removed 48 hours after operation, and the posterior space was irrigated daily with warm salt solution. The patient was discharged five weeks later, having gained 5 lb. in weight. It was necessary to readmit the patient three months later because of a persistent perineal sinus, which, when curretted and freshened up, healed completely.

Pathologic Report.—This showed the growth to be an ulcerated, necrotic mass from the lower rectum, $10 \times 6 \times 3$ cm. thick. The superficial portion of the growth was hemorrhagic.

Microscopic examination showed the tumor to consist of cylindrical and polyhedral cells, which for the most part were arranged in solid clumps. In some areas, gland formation was noted. There was considerable variation in cell morphology. The surface of the tumor showed necrosis with extensive ulceration. Gross and microscopic diagnoses were adenocarcinoma of the rectum, Grade 3.

Results.—This patient has been seen at periodic intervals since operation three years ago. She is now 18 years old, and weighs 135 lb. She is enjoying excellent health. The colostomy works perfectly well, and periodic examinations have shown no evidence of recurrence. The patient was given no postoperative irradiation, because of child-bearing possibilities.

Note: The patient is entirely well now, three years and ten months after operation.

GENERAL DISCUSSION

In reviewing the cases of carcinoma of the rectum of four hospitals in Baltimore, I found that in the Maryland General Hospital there were 72 cases from 1926 to 1946. The youngest patient, besides the present, was 37 years of age. There were only four patients between 40 and 50 and 67 over 50 years of age. In the Bon Secours Hospital there were 47 cases from 1932 to 1946, and the youngest patients were, respectively, aged 35, 38 and 39 years. Two of these patients, aged 38 and 39, died following operative procedure in the hospital. One patient, aged 35, survived a one-stage abdominoperineal resection, but died two years later from generalized metastasis. In the South Baltimore General Hospital there were 42 cases from 1926 to 1946. Only one under 30 years of age occurred, a patient aged 26, who had a palliative colostomy. Only three patients were under 40 years of age. In the University of Maryland Hospital there were 240 cases of carcinoma of the rectum of all ages from 1925 to 1946. There were seven patients under 30 years of age, the youngest being 17. These respective ages were 17, 20, 25, 27, 28 (two cases) and 30 years of age.

All were inoperable and had palliative operations and radium therapy, except one, aged 20, who is living one year following abdominoperineal resection. Of 38 patients whom I have operated upon in the last 20 years, there were only two other patients under 40 years of age. One patient, aged 26, was inoperable and had a palliative colostomy. The other patient, aged 32, had an abdominoperineal resection performed and died three years later from metastasis to the liver.

In a personal communication Dr. Fred Rankin stated that he had not operated upon a patient younger than 21 years of age since 1923. He could not remember operating upon a patient younger than 21 years of age while he was at Mayo Clinic. He stated that his personal experience did not include an individual in the 'teens.

Dr. Harvey Stone stated in a personal communication that he had had three patients under the age of 20 and probably six or seven under the age of 30. It has been his experience that in this group of patients the growth is highly malignant, and he thought that all of his patients, whether operated on radically or not, died within three years.

In a personal communication from Dr. Frank Lahey, who in 1937 operated on a patient 13 years and 9 months old, he stated that this patient is still living without any recurrence.

In a personal communication from Dr. Neil W. Swinton of the Lahey Clinic, he states that the clinic has had quite a number of patients under 30 years of age with cancer of the rectum, who have had successful one-stage abdominoperineal resection; the end-result figures closely approximate those in the older age group.

Dr. C. W. Mayo of the Mayo Clinic stated in a personal communication that they had not had any cases of carcinoma of the rectum under 15. They had one patient, aged 18, who had a combined abdominoperineal resection in 1939.

Of the patients with carcinoma of the rectum and rectosigmoid who were treated at the Mayo Clinic between 1910 and 1933, 3.4 per cent were 30 years of age or younger. In 1940 Mayo and Madding [12] reviewed 116 cases of carcinoma of the rectum and rectosigmoid in individuals under 30 years of age. They stated that, although in the young the lesions are of a higher grade than in older patients, the outlook is not as hopeless as some believe. Young people will stand radical operative procedures better than older people. They stated that rectal and proctoscopic examinations made the diagnosis possible in 100 per cent of cases. Lesions on the anterior wall have a poorer prognosis than those on the posterior wall, because the anterior lesions commonly involve other viscera. Dr. Fred Rankin [17] stated in his book that age is no barrier to the occurrence of malignant lesions of the colon and rectum. Rankin and Comfort [18] reported a 3.85 per cent incidence below 30 years of age in 1,452 patients with carcinoma of the rectum. Rankin also stated that carcinoma of the colon and rectum in children under 18 is a very infrequent occurrence. Walker and Daly [22] reviewed the literature in 1934 and found only 10 proven cases of carcinoma of the colon in children under 15. Pfeifer and Wood reported an additional case in 1935, and Oglivie reported another in 1946. Warthen [23] in 1937 reported a case of carcinoma of the transverse colon in a 14 year old Negro girl. All together, according to Rankin, 25 cases of carcinoma of the large intestine have been noted in persons aged less than 18, 21 in persons less than 15 years and two in children aged 5 and 7 years, respectively. As to situation of the lesions, 12 were in the cecum and ascending colon, 6 in the transverse colon, 2 in the descending or sigmoid colon and 5 in the rectum. Pennington, who reviewed 7,313 cases, found only 40 cases under 20 years of age. Sara Jordon and Chamberlin [8] stated that from 1927 to 1936, out of 1,236 cases of the digestive tract, there was 1 case of carcinoma of the rectum under 15, 1 patient aged 16, and 1 patient aged 20. There were four patients aged 20–25, nine patients aged 26–30, and 26 patients aged 31–35. Rosenberg, in 1934, studied the cases of carcinoma at the Pathologic Institute of Munich from 1910 to 1933; of 4,048 cases, he found 1 case of carcinoma of the rectum between 16 and 20 years of age, 2 cases between 20 and 25, and 4 cases between 26 and 30 years of age.

Oosting [15] in 1941 stated that carcinoma of the rectum before 15 is rare. He reported two cases, one a 13 year old, colored girl, who was not operated on, but was found at autopsy to have a highly malignant adenocarcinoma with metastasis to the lymph nodes and adjacent tissues. The second case was an 8 year old girl with adenocarcinoma of a polyp, which was removed by the rectal route. He stated that they were the first 2 cases of adenocarcinoma of the rectum in people under 20 years of age in over 2,000 autopsies at the Miami Valley Hospital. He quoted 32 cases in the literature of carcinoma of the rectum, sigmoid and anus under 15 years of age from 1865 to 1941. He was able to find 48 cases of primary adenocarcinoma in young people, up to and including 15 years of age. Bacon, Wolfe and Archambault [1] made a list of 76 cases from 16 years down reported up to 1942, 46 occurring in the rectum. They also added 2 of their cases, one child, living, 5 years and 6 months, who had a malignant polyp removed by the rectal route, and another child 3 years and 8 months, who died 19 months later after operation and irradiation. According to the Vital Statistics of the United States in 1941,[21] there were 8,964 deaths from carcinoma of the rectum and anus; 4,817 were white males, 3,048 were white females. There were 213 Negro males and 4 females. From 15 to 19 years of age, there were 9 deaths, 8 of which were whites and 1 in a Negro; 5 were males and 4 females. There were 18 deaths aged 20–24, 15 being white and 3 Negroes; 12 were males and 6 were females. In the *Bulletin of the American Cancer Society*, November, 1945, it is stated that the age of cancer begins at birth; and that in children from 5 to 14 years of age there are more deaths from cancer than from influenza (with respiratory complications), dysentery, whooping cough, diphtheria or measles.

SUMMARY

1. A case of adenocarcinoma of the rectum in a 15 year old girl, who is well three years following a one-stage abdominoperineal resection, has been presented.

2. Carcinoma of the rectum in early youth, 15 years or under, is not frequent.

3. A growth which may be thought to be inoperable clinically may be found to be removable at operation.

4. Growths in patients under 30 years of age show a greater malignancy than in all ages taken together.

5. There is still great need for early recognition and diagnosis of these cases.

6. Complete removal of the growth and adjacent tissue by abdominoperineal resection gives the best chance for longer survival.

RÉSUMÉ

1. L'auteur présente un cas d'adénocarcinome du rectum survenant chez une fillette de 15 ans. La malade est bien portante trois ans après une résection périnéoabdominale dans un stade.

2. Le carcinome du rectum est rare chez les sujets ayant quinze ans ou moins.

3. Une tumeur paraissant inopérable du point de vue clinique est parfois extirpable à l'opération.

4. Les tumeurs survenant dons les premières trente années de la vie sont beaucoup plus malignes que dans tous les autres âges réunis.

5. Il importe de reconnaître ces tumeurs à leur début. Les opérations prècoces nous offrent de bien meilleurs résultats.

6. L'ablation complète de la tumeur et des tissus environnants par résection abdominopérineale dans un stade nous offre les meilleures chances d'une plus longue survie.

SOMMARIO

1. Un caso di adenocarcinoma alla parte retta in una giovane di 15 anni, vive ancora tre anni dopo la addominoperineo risezione e stata presentata.

2. Carcinoma al retto a giovani inferiori ai 15 anni non e tanto frequente.

3. Un tumore crescente che credesi inoperabile, sotto esaminazione trovasi di essere movibile per mezzo di operazione.

4. Tumore crescente in persone sotto i 30 anni di eta dimostrano di essere soggetti a piu malignita di fronte alle altre eta assieme.

5. Vi e tanto bisogno per una presto riconoscimento e diagnosi di tuti questi casi.

6. Completa rimozione del tumore crescente e l' adiacente tissuto dall' addominoperineo risezione dara la miglior opportunita per lunga vita.

SUMARIO

1. Se ha presentado un caso de adenocarcinoma del recto en una muchacha de 15 años, que se ha puesto buena a los tres años practicando una resección abdominoperinea.

2. El carcinoma de recto en juventud temprana, menos de 15 años, no es frecuente.

3. Una acrecencia, la cual pueda creerse operable pro procedimientos clínicos, es posible que puede removerse por medio de una operación.

4. Las acrecencias en pacientes cuya edad sea menor de 30 años muestran una mayor malignidad que en cualquiera otra edad.

5. Todavía existe una gran necesidad de reconocimiento y diagnóstico temprano en esos casos.

6. Una completa remoción de la acrecencia y tejidos adyacentes por medio de una resección abdominoperinea, proporciona la major oportunidad para sobrevivir más tiempo.

Свод.

1. Доложен случай адэнокарциномы прямой кишки у 15-летней девочки, которая вполне здорова в течении трех лет после одностажной абдомено-перинеальной резекции.

2. Рак прямой кишки до 15 лет встречается редко.

3. Опухоль, кажущаяся клинически неоперативной, может быть при операции найдена удалимой.

4. Опухоли у больных до 30 лет являются более злокачественными чем во всех других вместе взятых возрастах.

5. Еще существует великая нужда в раннем распознании и диагностике этих случаев.

6. Полное удаление опухоли и соседних тканей дает наилучший шанс на более долгую жизнь.

BIBLIOGRAPHY

1. Bacon, H. E., Wolfe, F. D., and Archambault, R. A., Rectal Malignant Tumor in Childhood; Report of Two Cases, Am. J. Dis. Children **64**:70–79, 1942.
2. Bottin, J., Une sténose rectale de diagnostic étiologique malaisé, Ann. Soc. méd.-chir. de Liége 168–174, 1935.
3. Buie, L. A., Important Facts Concerning Diagnosis and Management of Lesions of Terminal Portion of Colon, Texas State J. Med. **38**:431–435, November, 1942.
4. Cowdry, E. V., Children Can Have Cancer, Too, Bull. Am. Cancer Soc. **27**:122–125, November, 1945.
5. Desaive, P., Un cas rare d'adéno-carcinome ano-rectal, Liége méd. **27**:945–950, July 22, 1934.
6. Dixon, C. F., Incidence, Prognosis and Curability of Malignant Lesions; Brief Review, J. Iowa M. Soc. **35**:215–219, June, 1945.
7. Dorn, Harold F., Illness from Cancer in the United States, Pub. Health Rep. **59**:33, Jan. 14, 1944; 65, Jan. 21, 1944; 97, Jan. 29, 1944.
8. Jordan, S. M., and Chamberlin, D. T., Cancer of Digestive Tract in the Young, Surg. Clin. North America **17**:815–820, June, 1937.
9. Lahey, F. H., Selection of Operation and Technic of Abdominoperineal Resection for Carcinoma of the Rectum, Surg. Clin. North America **26**:528–550, June, 1946.
10. Lahey, F. H., Surgical Practice of Lahey Clinic, W. B. Saunders Company, Phliadelphia, 1941.
11. Lawson, T. C., Carcinoma of Rectum in Young Man of 17 Years, California and West. Med. **40**:171–174, March, 1934.
12. Mayo, C. W., and Madding, G. F., Carcinoma of Rectum and of Rectosigmoid in the Young, Arch. Surg. **40**:83–89, January, 1940.
13. Mayo, C. W., and Schlicke, C. P., Carcinoma of Colon and Rectum; Study of Metastasis and Recurrences, Surg., Gynec. & Obst. **74**:83–91, January, 1942.
14. Mayo, C. W., and Schlicke, C. P., Carcinoma of Rectum, Rectosigmoid and Sigmoid; Selection of Cases for Onestage Combined Abdominaperineal Resection, South. Surgeon **11**:14–23, January, 1942.
15. Oosting, M., Adenocarcinoma of Sigmoid Colon, Rectum and Anus in Children; Report of Two Cases in 13 Year Old Girl and 8 Year Old Boy with Summary of Recorded Cases up to 15 Years of Age, Ohio State M. J. **37**:1067–1068, November, 1941.
16. Pemberton, J. de J., and Dixon, C. F., Summary of End Results of Treatment of Malignancy of Thyroid Gland and Colon, Including Rectum and Anus, Surg., Gynec. & Obst. **58**:462–464, February, 1934.
17. Rankin, F. W., and Grahams, A. A., Cancer of Colon and Rectum, Charles C Thomas, Springfield, Illinois, 1939.
18. Rankin, F. W., and Comfort, M. W., Carcinoma of Rectum in Young Persons, J. Tennessee M. A. **22**:37–42, June, 1929.
19. Shedden, W. M., Carcinoma of Rectum and Sigmoid with Particular Reference to Disease as Seen in Youth, New England J. M. **209**:528–539, Sept. 14, 1933.
20. Smith, D., Carcinoma of Rectum in 11 Year Old Boy, Tr. Am. Proct. Soc. **35**:116, 1934.
21. Vital Statistics of United States, 1941, Part I, U. S. Dept. of Commerce.
22. Walker, R., and Daly, J. F., Carcinoma of Upper Colon in Childhood, J. Oklahoma M. A. **27**:119–121, April, 1934.
23. Warthen, H. J., Carcinoma of Colon in Childhood—Report of Case, Virginia Med. M. **64**:140–142, June, 1937.

Anal Sphincter Repair

HERBERT I. KALLET, M.D., F.A.C.S.
DETROIT, MICHIGAN

INCONTINENCE of the anal sphincter following injury or surgery is a most distressing complication. The psychologic damage is profound. Patients are withdrawn from society and become morose and depressed. Local irritation from the constant contamination of the perineum and clothing, the prolonged wearing of pads and other protective device adds to the discomfort. Not infrequently, as well, the rectal mucosa prolapses through the gaping orifice becoming traumatized, with resultant bleeding and pain.

Incontinence is largely avoidable. Proper handling of fistulas and injuries in the first place will usually prevent this disability. Unfortunately this is not always the case.

ANATOMICAL CONSIDERATIONS

A consideration of the musculature of this region is essential for a clear understanding of both the prevention and the surgical treatment of incontinence. The smooth muscle fibers of the circular coat of the colon are concentrated at the termination of the rectum to form what is known as the internal sphincter. This structure, like other smooth muscle organs, is not under central nervous control. In animals with artificially induced central lesions, the muscle tends to return to independent function dilating and contracting periodically to produce automatic defecation. In humans with cord lesions a certain automatic defecation reflex also develops in which the internal sphincter may participate.

The external sphincter ani is of greater importance. The muscle forms three layers, termed the subcutaneous, superficial and deep. The origin blends with the termination of the levators. Posteriorly the fibers insert into a tendinous structure attached to the coccyx. This is of surgical significance. The attachment to a fixed point such as the coccyx anchors the muscle. Accordingly, the sphincter may be split posteriorly with relative impunity. The gap produced by incisions or injury in this location is wedgelike in shape. In fact, incisions are deliberately made here for the treatment of fissures, pectenosis and other conditions associated with sphincter spasm or contraction.

Anteriorly a quite different anatomic arrangement exists. There at the so-called central point of the perineum, the sphincter fuses with the superficial and deep transversus perinei muscles which have a lateral pull. At that point also insert the bulbo and ischiocavernosus muscles whose direction is upward and lateral. Defects at this site are likely to be more serious. Because of this muscular cross pull, in the treatment of ulcers at the anterior commissure where a sphincterotomy may be indicated, the muscle should be put at rest by posterior incision rather than through the wound left by the removal of the lesion.

PREVENTION

Fistulas in the anterior location must be excised with especial care. Often, particularly in multiparous women with a thin perineum, the operation should be done in stages either with or without the insertion of a seton. In multiple fistulas involving both sides, bilateral incisions through the sphincter may result in loss of function. In this instance, too, a stage procedure will allow one portion of the muscle to heal before an incision opposite is made.

Another factor in the prevention of incontinence has been reiterated time and again by Hirschman, namely, the avoidance of prolonged postoperative packing. Gauze interposed between the severed muscle fibers acts mechanically to prevent their union.

The resulting scar is wide and irregular, inadequate for perfect control.

SURGICAL TECHNIC

Many technics have been devised for repair of the injured muscles. The percentage of failures, however, has been high. Blaisdell [1] in 1940 reviewed 133 cases operated upon by members of the American Proctologic Society. Good results were obtained in only 42 per cent, the condition improved in 33 per cent and remained unimproved in 25 per cent. These statistics were compiled from operations done by men especially trained in rectal surgery. It is probable that the figures taken at large would show an even smaller percentage of satisfactory results.

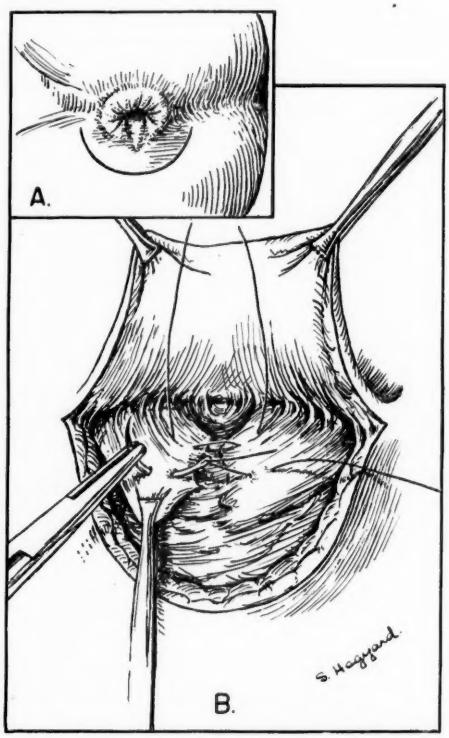


Fig. 1.—*A*, semilunar incision carried well beyond the scar. *B*, flap dissected up; healthy muscle is exposed and sutured with alloy steel wire.

The chief difficulty has arisen from the incidence of infection with sloughing of the suture material and disruption of the wound. The introduction by Smiley [2] of alloy steel sutures to unite the separated muscle ends has aided materially in reducing the number of disruptions. The administration of vitamin C and the use of chemotherapeutic agents have further improved the prognosis for recovery.

A semilunar incision is made well beyond the anus and of sufficient length to give adequate exposure. A flap of skin and anal membrane is dissected off the subcutaneous fat and scar, laying bare the fibrous tissue separating the muscle fibers. Dissection is carried back on each side of the scar until the uninvolved portion of the sphincter is exposed. An Allis forceps is next placed on each end of the sphincter to identify the direction of the muscle pull. No effort is made to free the cut ends. By means of no. 30 alloy steel wire, the muscle fibers are brought together and folded over the fibrous gap which has been the source of incontinence. Three to five interrupted wire sutures are usually needed to obliterate the dead space. These must be tied without

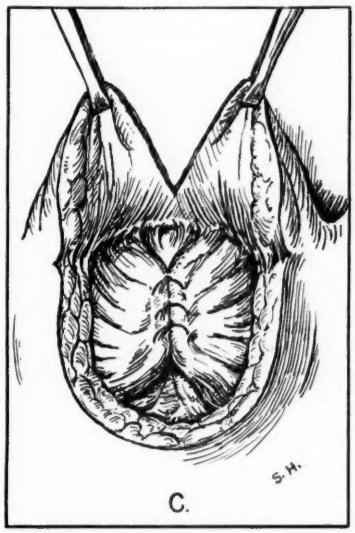


Fig. 2.—Muscle is folded over and dead space eliminated as sutures are tied. Wedge is taken out of flap to prevent redundancy.

undue tension and their cut ends carefully buried. The skin and membranous flap is then replaced. If there is redundancy, a portion of the covering can be trimmed to fit accurately. Closure is made by dermal or silk sutures. No deep retention sutures are necessary. The wound is sprinkled with sulfanilamide crystals and a pressure dressing applied.

If there is a prolapse of a single fold of mucous membrane into the gap this may be excised at the time of operation. However, if a complete cuff of mucosa protrudes through the anus it is advisable to remove this redundancy at a later operation.

When a defect exists on two sides it is best to correct one side at a time. This allows healing to take place on half the muscle before the remaining healthy fibers are subject to tension from an opposing direction. Operations for the correction of incontinence should be done as soon as practical after creation of the defect. The muscular tissue tends to atrophy from disuse, and the prognosis for a successful result decreases with lapse of time. Surgical measures for repair following abscesses and fistulectomies may be done as soon as the wounds have healed completely and the infective process has subsided.

POSTOPERATIVE CARE

It was formerly our custom to keep patients strictly in bed for at least a week. With the present tendency toward early rising, it might do no harm to allow them to get up sooner. The patients are given adequate doses of cevitamic acid and other vitamins as indicated. Succinylsulfathiazole or sulfathaladine is started at once. These drugs serve a dual role; they lessen the quantity of stool and reduce the bacterial content. Recently Poth *et al.*[3] have pointed out that an unexplained antagonism exists between the action of penicillin and sulfathaladine. Accordingly, should infection set in with indication for the administration of penicillin, it would probably be advisable to use the succinyl rather than the phthalic radical. The use of these preparations permits the bowel to be tied up for several days without discomfort. On the fourth day a dose of phosphate of soda is given before breakfast and repeated, if necessary, before lunch. If this is not effectual, an enema may be given.

Sitz baths are not advised. The wounds are kept clean with irrigations of some mild solution such as 1:3,000 potassium permanganate. Two per cent gentian violet is applied twice daily. The suture line is watched carefully for infection. One or more stitches should be removed at the first sign of beginning abscess. Ordinarily they may all be removed in about five days. The steel wires are not disturbed and are usually left permanently buried. They seldom produce any discomfort, but they may be subsequently removed should they cause annoyance. Sloughing may take place in a portion of the flap. This is not important as healing will occur even if the entire flap becomes necrotic. Secondary infection is usually in the subcutaneous rather than in the muscular structures and the steel wires, unlike catgut, hold while union is taking place.

This situation was observed in the case of a Negro, age 35, admitted to the Detroit Receiving Hospital with complete anal incontinence following a fistulectomy performed five years before. Four previous plastic operations had been attempted without success. Using the technic described above, plastic repair was performed utilizing steel sutures. Sloughing occurred in the skin flap, but the muscle ends held firmly and could be observed to function in the exposed wound. The skin eventually healed, and his control has since remained excellent.

CASE REPORTS

The following brief case extracts illustrate some of the problems encountered.

Case 1.—A young married woman, age 27, consulted me Jan. 11, 1943, because of complete lack of control. Two years previously she had had an operation for rectal abscess in which incisions had been made through both the anterior and posterior commissures. The entire posterior half of the sphincter was absent. Her psychologic depression was profound. For two years she had been practically confined to her home. She had not seen a movie or gone to church. She was operated upon Jan. 23, 1943, the muscle being brought together

by three alloy steel wires. She made an excellent recovery, establishing complete control. Subsequently she became pregnant. I was fearful that the delivery might damage her weakened muscle and recommended cesarean section; this was done.

Case 2.—Sphincter repair may be performed with success even in the presence of chronic diarrhea. A young woman, age 24, consulted me Aug. 21, 1942, with a terrific pyogenic infection involving her entire perineum. The numerous sloughs and abscesses had produced a deep gap in the right side of her anal sphincter. It took more than a year before the infection was eradicated, and the end result was a distorted and poorly functioning anus. The patient subsequently had a ruptured appendix which required drainage. A fecal fistula developed and persisted. A second operation was performed to close the fistula. The cecum was found thickened and diseased; therefore, an ileotransverse enterostomy was done and the cecum and ascending colon resected. The removal of the water-absorbing apparatus of the proximal colon gave rise to frequent watery stools, which with her weakened anal musculature made her almost completely incontinent. Prognosis seemed poor for correction of the incontinence, but the patient was so miserable and insistent that on Apr. 11, 1946, a plastic muscle closure was performed. The results were surprisingly good. She has been able to eliminate the wearing of a pad and to return to work.

Case 3.—In another patient with diarrhea from a chronic ulcerative colitis a repair operation was successful. This girl, as is common in colitis patients, had developed several perianal abscesses and fistulas. These were bilateral in location and had left her incontinent. In this instance, repair was done in two stages, each side being spliced at a separate operation. The result here too was most gratifying.

Case 4.—A case of impalement also presented some interesting surgical problems. A husky lad, age 17, weighing about 170 lb., while at work on a platform 6 ft. high jumped to the ground, striking the handle of a broom which he had placed nearby. The seat of his trousers was thin, and he was wearing no underwear. The handle entered the anus and tore the posterior wall of the anus and rectum for several inches penetrating further under the glutei for about 6 in. He was admitted to Harper Hospital. Because of the blunt nature of the impaling object, it was decided not to do a primary closure until the viability of the torn tissues could be determined. He was started at once on succinylsulfathiazole by mouth and penicillin by intramuscular injection. He ran a febrile course for about three days, and there was considerable drainage from the penetrating wound in his buttock. By the end of a week temperature was normal. On the tenth day, the rent in the mucosa and muscle was repaired under spinal anesthesia, and the posterior wound extended so that its drainage would be away from the anus. The boy made an uneventful recovery, had no difficulty in control and within two months was accepted by the army as 1A.

Case 5.—A 38 year old white woman was operated on Apr. 16, 1946. She had had a hemorrhoidectomy performed in 1940 with infection and formation of an abscess in the right perianal region which was drained. A fistula developed, and in 1941 a fistulectomy had been performed. Since that time she had been almost completely incontinent. To add to her discomfort, there was a prolapse of the rectal mucosa of more than an inch which exuded mucus and gave rise to severe irritation of the entire perineum. The sphincter muscle was repaired with satisfactory control. About a month ago the prolapse was excised.

These cases could be multiplied. They are merely illustrative of the difficulties which are presented. It is not possible to set down hard and fast rules. Each case must be considered independently and the surgeon must be resourceful.

SUMMARY

1. Anal incontinence following injury or surgery is a most distressing complication.
2. A clear understanding of the anal musculature may help to prevent this disability.
3. A surgical technic which has proven satisfactory is discussed.
4. The use of alloy steel sutures is emphasized.

RÉSUMÉ

1. L'incontinence anale consécutive à un trauma ou à une opération est une complication très sérieuse.
2. Une connaissance plus complète de la musculature anale peut aider à empêcher cette perte de contrôle.
3. Une technique chirurgiciale qui a donné des résultats satisfaisants est présentée et discutée.
4. L'emploi de sutures d'un alliage d'acier est recommondé.

(Continued on page 426)

Artery Ligature in Two Stages

BOYAN HADJISTAMOFF, M.D.*
SOFIA, TURKEY

LIGATURE of some large arteries causes in a certain number of cases heavy and irreparable complications. A quickly developing gangrene appears in the limbs, thus making amputation inevitable. According to Wolff, both necrosis and gangrene appear in the extremities after the ligature of the internal iliac artery in 50 per cent of cases, of the femoral artery in 25 per cent, of the poplitean artery in 14.9 per cent, of the femoral artery below the deviation of the femoral profunda and the circumflex arteries in 12.7 per cent, of the external iliac artery in 12.2 per cent, of the axillary artery in 15 per cent and of the subclavian artery and the brachial artery in 4.8 per cent. Cerebral softening, followed by hemiplegia, developed in 55.5 per cent after ligature of the common carotid artery. This fateful complication defines the carotid artery ligature as a most dangerous operative intervention.

These complications can be avoided or reduced to a large extent by making the artery ligature in such a way as to enable the collateral blood circulation to prepare to meet the sudden loss of the large blood vessel. This particular way, we think, is found in performing the ligature in two stages, a technic we applied as an experiment in three hopeless cases of cancer. The ligature of the common carotid artery in these cases appeared as an urgent operation due to already existing erosive hemorrhages in two cases and threatening hemorrhages in the third case.

We perform the ligature in two stages in the following manner. At the first operation we do not tie the artery completely. By means of a thick silk thread, we tie it in such a manner as to permit only a trickle of blood, hardly perceptible to finger touch. Distally and cranially, respectively, from the tied ligature, a second thick silk thread is put around the artery, with which later, after 14 days, the artery is tied completely. In order to find this thread easily during the second operation and to reach the artery without difficulty, a rubber tube, 1½ cm. in diameter, is left in the operative wound. We fix the tube vertically with a thread to the surface of the body; through it is passed the thick thread with which the ligature is completed at the second operation (Fig. 1). The rubber tube must be long enough to reach from the artery to the subcutaneous fatty tissue. Its end lies directly under the skin to prevent the soft tissues from uniting during the interval between the two operations. At the second operation the artery, slightly pulsating and reduced in lumen, is easily located. Without the insertion of the rubber tube, location of the artery would be very difficult in the complicated topography of the neck region (vagus nerve, carotid sinus, internal jugular vein, etc.).

Fourteen days later a simple skin incision will uncover the rubber tube. After pulling it out of the wound, the thick thread tied around the artery is at hand, and there is free approach to the artery. This thread is now tightened to complete the ligature. The interval between the two operations serves to create a sufficiently strong collateral blood supply, thereby preventing gangrene of the limbs or cerebral softening. Further clinical an experimental research will decide whether the two week interval is sufficiently long to establish this collateral blood circulation. We believe that the most powerful stimulus for the collateral blood circulation is the first, incomplete ligature of the artery. This ligature should be strong enough to cause a sufficient oxygen hunger in the corresponding tissue region; by way of reflex, this oxygen hunger

* From the Surgical Clinic, Sofia University.

will provoke the saving impulse of creating the collateral blood supply.

CASE REPORTS

Case 1.—This technic for ligature of the common carotid artery was tried for the first time in a patient with a recurrent malignant tumor in the neck and jaw region. The patient had previously been operated on for a mixed tumor of the parotid gland, but the tumor reappeared (Fig. 2). Incessant pain and several severe hemorrhages in the tumor masses brought the patient near death. To expose the neck region, protruding tumor masses were removed by electrocautery. Then the ligature of the common carotid artery was performed in two stages, as described. The patient withstood the operation well, and no pathologic disturbances appeared either in the eye or the brain. Hemorrhages ceased. After ligature of the artery, the huge tumor, previously considered inoperable, was removed.

Case 2.—The patient had a cancer in the nasal cavity for which, over a period of three years, he had been operated on four times, followed by x-ray treatment. However, the tumor continued to re-

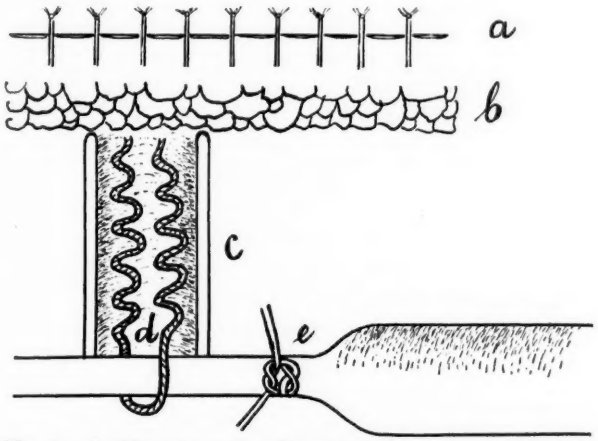


Fig. 1.—*A*, skin suture; *B*, subcutaneous fatty tissue; *C*, rubber tube; *D*, silk thread put around artery and placed in rubber tube with which complete ligature will be made at second operation. *E*, first incomplete ligature which permits slight blood flow.

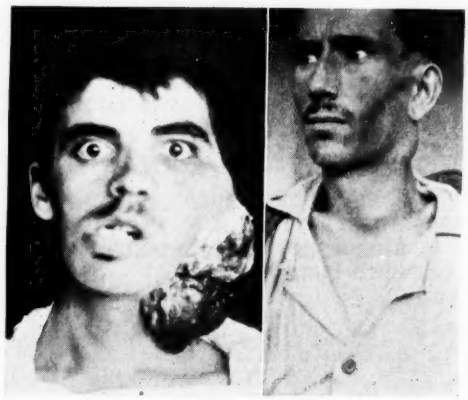


Fig. 2 *(left)*.—Fig. 3 *(right)*.

appear, each time larger in size. Deep hemorrhages exhausted the man and kept him in a constant state of apprehension. During examination a craterlike opening was found to occupy the nose and the left orbital and left maxillary region, extending deep toward the base of the skull. Ligature of the common carotid artery was done in two stages because of the frequent erosive hemorrhages. There were no postoperative complications on part of the brain, and hemorrhages stopped.

Case 3.—The patient presented a lymphosarcomatous tumor in the neck region. Ligature of the common carotid artery was done to prevent threatening erosive hemorrhages and to facilitate planned removal of the tumor. There were no postoperative complications.

Obviously these cases are too few in number definitely to prove the value of our technic of ligature of a large artery. This preliminary report is presented with the purpose of stimulating interest in other surgeons in this type of ligature. Further clinical and experimental work is needed for final evaluation.

SUMMARY

We have reported three cases of cancer in which our technic of ligating the common carotid artery in two stages was not followed by gangrene of the extremities or cerebral softening, complications which usually follow ligature of a large vessel.

RÉSUMÉ

Nous rapportons trois cas de cancer dans lesquels nous avons employé notre méthode de ligature de l'artère carotide commune en deux temps. Il n'y eut aucune gangrène des extrémités, ou aucun ramollissement cérébral. Ces complications surviennent ordinairement après la ligature des grands vaisseaux.

SOMMARIO

Abbiamo riportata tre casi di cancro in cui la nostra tecnica di legatura la carotite arterio comune in due operazioni non e stato seguita da cancrena dell' e stremita o da rammollimento cerebrale, complicazioni in cui usualmente seguano ligature di un largo vaso.

SUMARIO

Hemos informado de tres casos de cáncer en los cuales nuestra técnica de ligadura de la arteria carótida común en dos períodos no fué seguida por la gangrena de las extremidades o por ablandamientos cerebrales, complicaciones que siguen generalmente a la ligadura de un vaso grande.

Свод.

Доложены нами три случая рака, в которых наша техника перевязки общей сонной артерии в два стажа не была последована гангреной конечностей или мозговым размягчением, которые являются обычными осложнениями перевязки большого сосуда.

ANAL SPHINCTER REPAIR

(Continued from page 423)

SOMMARIO

1. Incontinensa anale dopo un quasto o complicazione.
operazione chirurgica e la piu dispiacente
2. Una chiara conoscenza della muscolatura anale forse aiutera per prevenire questa disabilita.
3. Una tecnica chirurgica di cui ha dato prova di saddisfazione e discussa.
4. L' us odi lega di acciaio per saturare e preferibile.

SUMARIO

1. La incontinencia anal que sigue a una lesión o a una operación quirúrgica constituye una desgraciada complicación.
2. Una clara comprensión de la musculatura anal puede ayudar a prevenir esta incapacidad.
3. Se explica una técnica quirúrgica, que se ha probado es satisfactoria.
4. Se pone de relieve el uso de suturas con acero de aleación.

Свод.

1. Заднепроходная несдержанность после повреждения или хирургии является очень удручающим осложнением.
2. Точное понимание мускулатуры заднего прохода может предотвратить этот недостаток.
3. Сделан доклад удовлетворительной оперативной техники.
4. Подчеркнуто применение швов из стального сплава.

BIBLIOGRAPHY

1. Blaisdell, Paul C., Repair of the Incontinent Sphincter Ani, Surg., Gynec. & Obst. **70**:692, 1940.
2. Smiley, K. E., Repair of Sphincter Ani, Trans. Am. Proct. Soc. p. 191, 1940.
3. Poth, E. J., Wise, R. J., and Slattery, M. P., Penicillin—Phthalylsulfathiazole Antagonism, Surgery **20**:147, July, 1946.

Lymphatic Factors in Wound Disruption Following Hernia Operations in the Inguinofemoral Region

GORDON E. PERRIGARD, B.A., M.D., C.M.*
MONTREAL, CANADA

A VERY important factor in the incidence of wound infection and disruption following hernia operations may be the collection of serum in the wound from disruption of lymphatic channels from too extensive separation of the subcutaneous tissues from the external oblique aponeurosis, thus damaging a superficial lymphatic network in this region.

It has been observed that sometimes, when a surgeon has enlarged his operative field by pulling and separating the skin and subcutaneous tissues extensively from the anterior surface of the external oblique aponeurosis for the simultaneous repair of multiple hernias on the same side or for the repair of a massive hernia, postoperative pitting edema occurs. The pathologic stage subsequent to this is frequently infection, which may be followed by wound disruption.

This appearance of edema about the wound with or without subsequent wound infection and disruption, following an extensive separation of the subcutaneous tissues from the external oblique aponeurosis, suggests that lymphatic drainage may be disturbed and disrupted by this procedure, hence initiating a collection of serum in the wound.

Information on this subject in the textbooks is extremely meager, but it seems to be that the lymphatic drainage of the lower anterior abdominal wall runs either to the subcutaneous channels which drain into the inguinal group of glands or to the deep extraperitoneal channels along the deep inferior epigastric and deep circumflex iliac arteries.

ANIMAL EXERIMENTATION

Controlled experiments with inguinal incisions were undertaken in dogs with and without contamination of the wounds with dog saliva.

A typical dog was operated on under sterile technic, making bilateral incisions above the inguinal ligament as for the usual repair of bilateral hernias. On one side the skin and subcutaneous tissues were widely separated from the external oblique aponeurosis. On the other side minimal separation was made. Both wounds were similarly contaminated by dog saliva, and within 36 hours it was obvious that serum accumulation and infection predominated in the side of the more extensive separation of the skin and subcutaneous tissues from the external oblique aponeurosis.

CASE REPORTS

Case 1.—A right direct inguinal hernia in a male patient was repaired under sterile technic, but the skin and subcutaneous tissues were separated widely from the external oblique aponeurosis. In spite of prophylactic sulfadiazine and penicillin therapy, pitting edema resulted (Fig. 2).

Case 2.—A bilateral hernia repair was performed on another male patient. On the right side the skin and subcutaneous tissues were widely separated from the anterior surface of the external oblique aponeurosis, and on the left side care was taken to make the most minimal separation of these structures. The right side developed pitting edema, whereas the left side healed without any edema or infection (Fig. 3).

These two cases represent typical results observed in this investigation.

It is conceivable that important lymphatic drainage channels lie on the anterior surface of the external oblique aponeurosis, under the layer of skin, and the subcutaneous Camper's fascia, fat and Scarpa's fascia. These lymphatic structures are probably incorporated in the fine delicate meshwork,

* From the Department of Anatomy, McGill University.

making the subcutaneous tissues adherent to the anterior surface of the external oblique aponeurosis. It is when (generally inadvertently) the surgeon separates these fine tissues excessively, that he probably disrupts lymphatic flow and drainage of the region with subsequent predisposition to collection of fluid and development of infection and wound disruption.

The position of the superficial lymphatic network is demonstrated in Figure 4*A*, where fine fibers are shown lightly fixing the subcutaneous tissues to the anterior surface of the external oblique aponeurosis. In Figure 4*B*, the external oblique aponeurosis has been incised, with what is considered the advisable maximum degree of separation of the subcutaneous tissues from the anterior surface of the external oblique aponeurosis. Figure 4*C* demonstrates what may be considered an excessive amount of separation of the subcutaneous tissues from the external

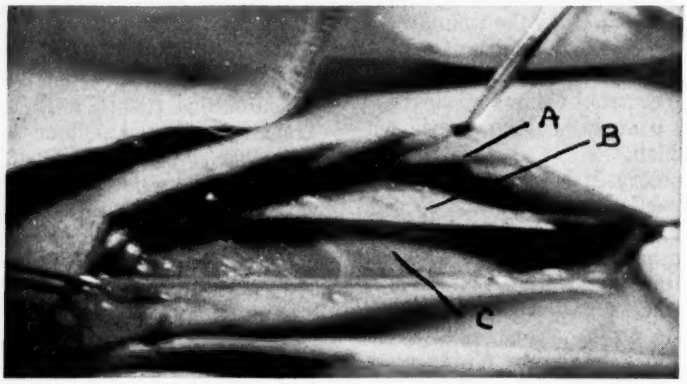


Fig. 1.—In approaching the left inguinal region, the skin and subcutaneous tissues *(A)* have been retracted to show beneath them the slightly adherent expanse of the external oblique aponeurosis *(B)*. The aponeurosis has been incised, revealing in this case a low attachment of the internal oblique muscle *(C)* to the inguinal ligament.

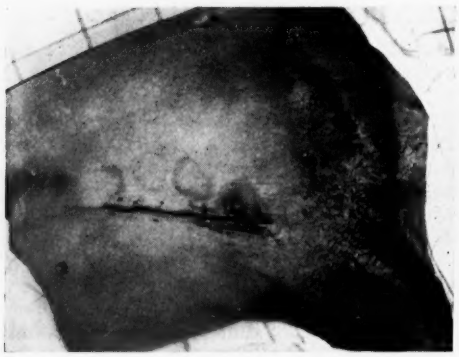


Fig. 2 *(left)*.—Postoperative pitting edema about an incision for a right direct inguinal hernia. Skin and subcutaneous tissues had been too extensively separated from the anterior surface of the external oblique aponeurosis.

Fig. 3 *(right)*.—A controlled bilateral inguinal hernia repair was performed on this patient. On the right side there was more extensive separation of the subcutaneous tissues from the anterior surface of the external oblique than on the left side. On the right side there is pitting edema, on the left there is none.

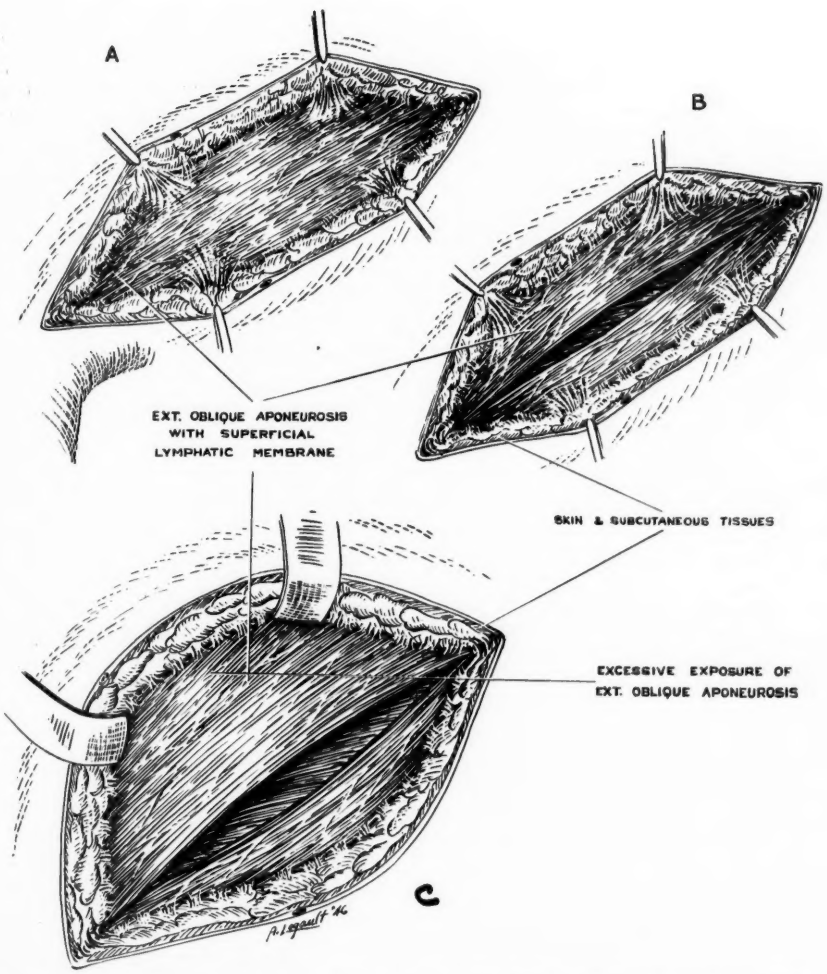


Fig. 4.—Left inguinal region. *A*, skin has been retracted to show adherent fibers fixing subcutaneous tissues to anterior surface of external oblique aponeurosis. These fibers spread out here in sheetlike fashion, presumably incorporating lymphatic drainage channels. In *B*, on either side of incision through external oblique aponeurosis, skin has been retracted to maximum degree advisable, in order not to disrupt any more than necessary lymphatic structures in fine adherent tissues. *C* shows excessive amount of exposure of anterior surface of external oblique aponeurosis. Superficial lymphatic membrane structure between subcutaneous tissues and external oblique aponeurosis may be damaged enough by this procedure to initiate pitting edema of regional tissues, subsequent pooling of serum in artificial space, and finally infection and wound disruption.

oblique aponeurosis. This amount of separation may predispose to localized pitting edema and subsequent serum collection, infection and wound disruption, from this initial damage to the superficial lymphatic network.

GENERAL DISCUSSION

This investigation was done with full realization that many factors can contribute to wound infection and disruption. Besides the general contributory factors to infection such

as hematoma, excessive trauma through use of heavy towel or skin clips in aged or thin skin, lowered resistance of the patient, vitamin C deficiency interfering with collagen formation, hypoproteinemia, poor preparation of the skin against pathogenic resident or transient bacteria possibly present, use of an overheated operating room causing sweating of the operative field † and the use of excessively heavy suturing material, allergy to various types of adhesive bandages used about the wound has been found to occur in occasional cases.

Cases of wound infection following simple inguinal hernia operations were investigated bacteriologically. Cultures of the discharging wounds and sinuses predominately grew staphylococci. If Bacillus coli were grown, one might suspect assisting house surgeons of having had a bowel movement before the morning surgery and the organisms entering the wound through a punctured glove.

SUMMARY

To prevent wound infection following inguinal hernia operations, it is considered advisable not to separate the skin and subcutaneous tissues any more than necessary from the anterior surface of the external oblique aponeurosis. Excessive separation of these tissues may disrupt the drainage of lymph from this region, initiating regional edema, collection of serum and subsequent infection and wound disruption.

Appreciation is extended to Professor C. P. Martin of the Department of Anatomy, McGill University, for his kind interest in this work on Hernia Investigation, and to Professor Fraser B. Gurd of the Department of Surgery, for his helpful advice in preparing this paper. The valuable surgical cooperation of Dr. B. A. Conroy of the Herbert Reddy Memorial Hospital is also acknowledged with pleasure.

RÉSUMÉ

Afin d'empêcher l'infection des plaies résultant des opérations pour hernies inguinales; il est recommandable de détacher la peau et le tissu sous-cutané le moins possible de la surface antérieure de l'aponévrose du muscle oblique externe. La séparation excessive de ces tissus nuit au drainage de la lymphe de cette région et il s'ensuit un oedème régional, une collection de sérum et de cela peut résulter une infection et une séparation de la plaie opératoire.

SOMMARIO

Per prevenire infezione alla ferita dopo l' operazione dell' ernia inguinale e preferibile l' avvertimento di non separare la pelle ed il tissuto sottocutaneo di piu del necessario della parte sotto superiore obliqua esterna aponevrosi. Eccessiva separazione di questi tissuti puo rompere lo scorrimento del limia da questa regione, inizianto regionale edema, accumolando sero e sussequente infezione e rottura della ferita.

SUMARIO

Para prevenir la infección de heridas a continuación de las operaciones de hernia de ingle, se ha considerado aconsejable no separar la piel y los tejidos subcutáneos nada más que lo necesario de la superficie anterior del aponeurosis oblícuo. La excesiva separación de esos tejidos puede interrumpir el drenaje de la linfa desde esta región, por lo cual se inicie un edema regional, la recolección de suero y subsecuentemente la infección de la herida.

Свод.

Чтобы предотвратить заражение раны после ингвинальной герниотомии, советуется не отделять кожу и подкожные ткани от передней поверхности наружного косвенного апоневроза более чем абсолютного необходимо. Излишнее отделение этих тканей может нарушить лимфатический дренаж этой области, начиная местный отек, скопление сыворотки и последующую инфекцию и расстройство раны.

† A sterile solution of aluminium chloride has been effective in helping the inhibition of local sweating (Canad. M. A. J. 49:51, 1943).

Urologic Aspects of Arterial Hypertension*

LLOYD G. LEWIS, M.D.
WASHINGTON, D. C.

CLINICALLY, two types of arterial hypertension are observed: paroxysmal and sustained. Paroxysmal hypertension is brought about by periodic expression of adrenalin into the blood stream from a tumor of the adrenal medulla or a similar tumor of the chromaffin system. Successful removal of this tumor, a pheochromocytoma, will cure the condition. Generally speaking, sustained hypertension is due to arterial disease. Patients with arterial hypertension under 50 years of age should be examined by intravenous pyelography to rule out the possibility of unilateral renal involvement. The removal of an atrophic, congenital or pyelonephritic kidney will cure the hypertensive state, provided that complete compensatory hypertrophy of the remaining kidney has developed.

Pheochromocytoma was first described by Manassee [12] in 1893. Helly [7] in 1913 noted hypertension in relation to a pheochromocytoma, but the relationship of this tumor to paroxysmal hypertension was first clearly pointed out by Labbé, Tinel and Doumer [9] in 1922. Beer, King and Prinzmetal [1] in 1937 demonstrated adrenalin as the pressor substance. By the method of Folin, Cannon and Denis, MacKenzie and McEachern [11] extracted 0.38 Gm. of epinephrine per 100 Gm. of tumor, surgically removed. Varying amounts of adrenalin have been extracted by others. The relationship of glycosuria to this tumor was noted by Helly and described by others, including a comprehensive report by Duncan, Seamans and Howard [3] in 1944. Sensitivity of these patients to histamine was noted by Roth and Kvale [13] in 1945. Wells and Bowman [14] in 1937 reported 82 cases from the literature, 27 of which were recognized clinically and 55 by the pathologist. A fairly large number of these tumors have been successfully removed and reported.

The pathology of this tumor has been thoroughly described in the literature. They are relatively benign tumors and rarely become malignant. By intravenous pyelography with or without air injection, the location of one of these tumors in the adrenal is not difficult. Similar tumors of the mediastinum and of the organs of Zuckerkandl have been reported by Koster [8] and others, and of the carotid body by Goodof and Lischer [6] in 1943 and Violé [15] in 1944. Demonstration of a paraganglioma (pheochromocytoma) is reported in Case 2. It is therefore obvious that a thorough search for the chromaffin tumor must be made in all cases of paroxysmal hypertension. In long standing cases the hypertension may become sustained and is described as of the malignant type.

CASE REPORTS

Case 1.—A soldier, 26 years of age, while fighting in the African Theater was hospitalized repeatedly because of attacks of syncope with vomiting. He was repeatedly returned to duty, and eventually a complete study was made in a general hospital staffed by physicians from the Massachusetts General Hospital. This case will be completely reported by Burrage and Halsted.[2] In the course of his workup, histamine was administered for gastric studies. This drug precipitated one of his most severe attacks, during which severe arterial hypertension was noted. Repeated test dosage with histamine showed sensitivity to this drug with precipitation of another attack. Examination by excretory urography revealed slight displacement of the left kidney downward and outward by a mass in the region of the left adrenal gland. Perirenal air injections were done

* Read before the Eleventh National Assembly, United States Chapter, International College of Surgeons, Detroit, Michigan, October, 1946.

which demonstrated an adrenal tumor approximately 10 cm. in diameter. He was returned to the continental limits of the United States and admitted to Walter Reed General Hospital, where the findings were confirmed and left adrenalectomy performed on Aug. 10, 1943. Excellent exposure of this tumor was obtained by resection of the twelfth rib. Extreme care was taken not to compress the tumor during the operation, because whenever the tumor was compressed, the blood pressure immediately rose to 300 systolic. Intravenous adrenalin was given throughout the operation in indicated quantities, diluted with saline solution. When the pedicle of this tumor was clamped, the pressure fell precipitously to 30 systolic and immediately rose on removal of the clamp from the pedicle; then adrenalin solution was given while the pedicle was clamped and the tumor removed. The patient received adrenalin in oil every four hours for six days postoperatively. The dosage was gradually reduced, until he was able to maintain a normal pressure of 110/80

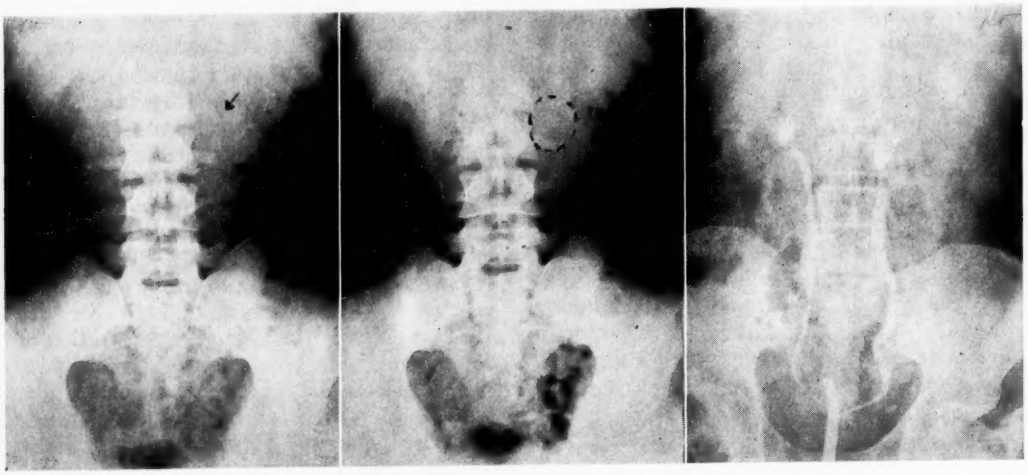


Fig. 1 *(left)*.—Fig. 2 *(center)*.—Fig. 3 *(right)*.

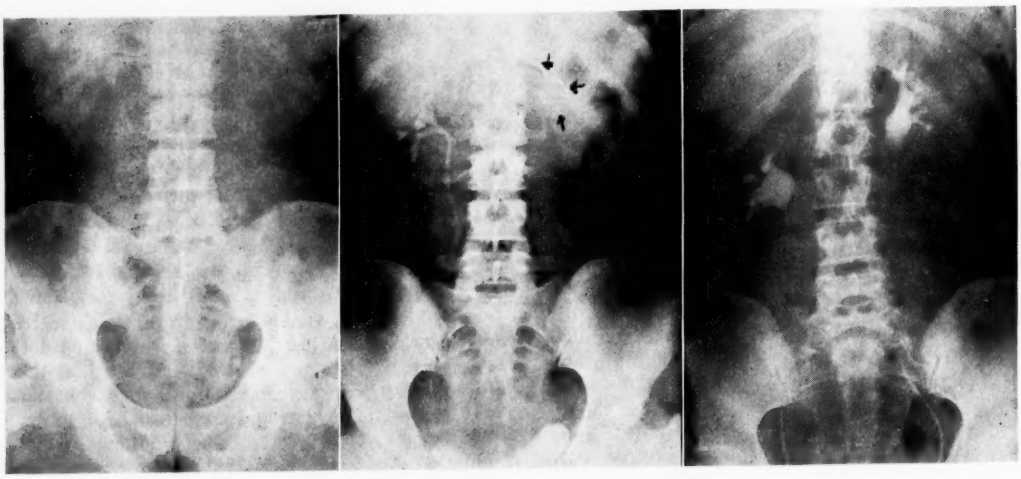


Fig. 4 *(left)*.—Fig. 5 *(center)*.—Fig. 6 *(right)*.

without adrenalin. The tumor was a typical pheochromocytoma. Complete relief from paroxysmal hypertension has been effected.

Case 2.—A 29 year old soldier was admitted to the Medical Service, Walter Reed General Hospital, Oct. 12, 1945, because of wounds. Arterial hypertension was noted on routine examination. The attacks of arterial hypertension were mild, and he had no complaint except fatigue. General physical and urologic examination was negative. The plain x-ray film (Fig. 1) showed a mass, 2.5 cm. in diameter, with calcification in the periphery, to the left of the aorta over the spinous process of the second lumbar vertebra. This small mass caused deviation of the ureter as shown by excretory urography (Fig. 2). With the history of paroxysmal hypertension, the preoperative diagnosis of paraganglioma (pheochromocytoma) was made, and removal of this tumor was accomplished on Nov. 13, 1945. When the pedicle of the tumor was clamped, the blood pressure dropped precipitously from 140/90 to 60/30. Adrenalin was given intravenously and the pressure returned to normal. The convalescence was uneventful and the patient is well. He had suffered multiple wounds from shell fragments, and in the differential diagnosis calcified hematocele was considered.

Deaths during and after operation have been due to shock. This must be prevented by the prophylactic use of adrenalin.

Temporary sustained hypertension is seen in uremic states, in severe prostatism and occasionally with bilateral ureteral obstruction.

Case 3.—A general officer, 52 years of age, was admitted to Walter Reed General Hospital because of the findings of arterial hypertension and microscopic hematuria on routine physical examination. The blood urea nitrogen was elevated to 56 mgm. per cent. Plain x-ray film of the abdomen showed calculi at both ureteropelvic junctures (Fig. 3). The ureteral catheters were obstructed at the ureteropelvic juncture so that pyelography was impossible. Intravenous pyelography showed very little function of the hydronephrotic right kidney. At operation on May 16, 1946, an acorn-shaped calculus, 4 x 3 x 3 cm., was removed from the right renal pelvis. This calculus almost completely obstructed the ureteropelvic juncture which was badly scarred. A YV plastic procedure was performed at the ureteropelvic juncture and nephrostomy done. On June 18, 1946, left pelviolithotomy was performed removing a calculus 4 x 3 x 2 cm. The ureteropelvic juncture was incised and splinted with a no. 18 urethral catheter. Nephrostomy was also performed. After removal of the obstruction, the blood urea nitrogen returned to normal, and phenolsulfonphthalein excretion showed 15 per cent excretion in 30 minutes from each kidney through the nephrostomy tubes. Blood pressure returned to normal limits during the period of the nephrostomy drainage but has since been elevated to 156/96. Intravenous pyelography shows remarkable return of function in both kidneys and bilateral recession of the hydronephrosis (Fig. 4).

Sustained hypertension can now be attributed to arterial disease. The hypertrophied heart is not the cause but the result of arterial hypertension. Renal disease per se does not cause elevation of blood pressure unless there is blood nitrogen retention. Occasionally arterial occlusion is the result of renal disease. In the majority of instances renal arterial disease is bilateral. There are, however, a few instances of unilateral renal arterial disease producing severe hypertension. The experimental work of Goldblatt[5] and others has shown that arterial hypertension can be produced by unilateral obstruction of renal blood flow; therefore, there has been a wave of enthusiasm for unilateral nephrectomy in cases of arterial hypertension. I was perhaps the first to perform unilateral nephrectomy in a case of severe arterial hypertension. That case has been reported by Boyd and Lewis.[2] The patient was examined for adrenal tumor and through error in interpretation of the perirenal air injection films, diagnosis of a left adrenal tumor was made and bilateral adrenal exposure after the method of Young done. The adrenals were perfectly normal in appearance; however, the posterior surface of the right kidney was found to be involved by an extensive infarct. Nephrectomy was performed and the patient made a complete recovery. He is still well nine years following surgery. The second case under my observation, a child 2½ years of age, with severe arterial hypertension, had a congenital atrophic pelvic kidney which was removed with relief of the hypertensive state. This case was reported by Leadbetter and Burkland[10] in 1938.

I have studied approximately 600 patients with arterial hypertension by means of intra-

venous pyelography and retrograde studies when indicated. Fifteen patients with severe unilateral renal disease were selected for operation. One had an infarct of the kidney as noted above; one had congenital atrophy with sclerosis of the renal artery; 13 had pyelonephritic atrophy with moderate to severe arterial change in the affected kidney. Nine of these patients are well; one of the remaining group of six died two years following surgery. The others are living but have not been cured of their hypertensive state.

A nonfunctioning kidney cannot produce the pressor substance which brings about the hypertensive state. Patients with a functionless hypoplastic kidney and patients with tuberculous autonephrectomy do not develop hypertension. In an appreciable number of cases patients with unilateral pyelonephritic atrophy develop arterial hypertension. Differential renal function tests by means of phenolsulfonphthalein determination, diodrast clearance and urea clearance studies indicate reduction of function on the affected side. Reduced blood flow caused by arterial damage results in lowered oxygenation, incomplete reduction of renal excretory material and absorption of a toxic pressor substance into the blood stream.

Cure of the hypertensive state by unilateral nephrectomy depends upon clearly demonstrated localization of the arteriosclerotic process to the affected kidney. If the process has extended as a generalized arterial disease, unilateral nephrectomy will not effect a cure. Demonstration of a complete compensatory kidney on the unaffected side justifies unilateral nephrectomy. All of the patients who had complete compensatory hypertrophy of the remaining kidney in our series are well. Those who had normal kidney function on the remaining side without compensation are not cured.

Case 4.—A 29 year old woman in her fourth month of pregnancy was referred for urologic consultation because of arterial hypertension. Two previous pregnancies had resulted in miscarriage. Her blood pressure varied from 190/110 to 210/115. Intravenous pyelography demonstrated a large, well functioning right kidney with a small contracted pyelonephritic kidney on the left (Fig. 5). The intravenous pyelograms demonstrated a fair rate of diodrast excretion on the affected side. Differential phenolsulfonphthalein test showed 35 per cent excretion from the right kidney in 15 minutes with only 2 per cent from the left. This test demonstrated, in our opinion, complete compensatory hypertrophy of the good kidney. Left nephrectomy was performed July 21, 1942. Pathologic examination showed a contracted pyelonephritic kidney with marked reduction of the size of the lumens of the main arteries. Within three weeks following operation, the patient's blood pressure had been gradually lowered to 130/90. She went through her pregnancy and was delivered without incident. This patient has been examined at frequent intervals and her pressure varies from 130/95 to 138/96.

Case 5.—The patient, 39 years of age, was admitted to Walter Reed General Hospital because of arterial hypertension, in serious condition with a hypertrophied heart and evidences of hypertensive retinitis. The blood pressure varied from 230/120 to 264/130. It came down slightly on rest in bed. Examination by intravenous urography showed a normal right kidney with a pyelonephritic kidney on the left (Fig. 6). She gave a history of repeated attacks of left pyelonephritis. Differential phenolsulfonphthalein test showed excretion of 30 per cent dye in 30 minutes from the right side, 5 per cent in 30 minutes from the left side. This was not considered evidence of complete compensatory hypertrophy; however, her condition was so serious that nephrectomy was performed in the hope of some benefit. Left nephrectomy was performed on June 23, 1942. She withstood the operation well. During her period of rest in bed following surgery, pressure was reduced from 190/110, but on return to activity her blood pressure has remained constantly elevated.

Urologic study of patients with paroxysmal hypertension consists of investigation of the adrenals and para-aortic regions for demonstration of chromaffin tumors. All patients under 50 years of age with sustained arterial hypertension should have intravenous pyelography. In a limited number of cases, the cause of the hypertension will be demonstrated. When unilateral renal disease is demonstrated, retrograde studies will confirm the diagnosis, and by means of differential function tests compensatory hypertrophy of the remaining kidney may or may not be demonstrated. Removal of chromaffin tumors

(pheochromocytomata) of the adrenal or of the paraganglionic chain will result in cure of the patient with paroxysmal hypertension. Removal of an atrophic pyelonephritic kidney with reduction in renal blood flow can be accomplished by unilateral nephrectomy only if compensatory hypertrophy of the remaining kidney is demonstrated.

SUMMARY

The relation between tumor of the adrenal medulla and paroxysmal hypertension is discussed. The author reports case histories, in which removal of a pheochromocytoma resulted in cure of the arterial hypertension. In several cases where a compensatory hypertrophied kidney was present, removal of the other, diseased kidney brought about improvement in the arterial hypertension.

RÉSUMÉ

L'auteur discute les rapports qui existent entre les tumeurs adrenales et l'hypertension artérielle. Il cite des cas dans lesquels l'ablation de phéochromocytomes fut suivie d'amélioration des symptômes des l'hypertension arterielle. Dans plusieurs cas où existait un rein hypertrophié compensatoire l'enlèvement du rein maláde entráina une amélioration de l'hypertension artérielle.

SOMMARIO

La relazione tra tumore al rene e arteriale ipertensione e discussa. L' autore rapporta un numero di casi storici, in cui la rimozione per mezzo di operazione di una pheochromocitoma e risultata nel miglioramento dell' arteriale ipertensione.

SUMARIO

La relación entre el tumor de riñon y la hipertensión arterial es tratada en este artículo. El autor informa sobre un número de casos, en los cuales la remoción de un foeromocitoma repercute en beneficio de la hipertensión arterial. En algunas casos, en los que existía un compensatorio riñon hipertrofiado también llevaba mejoría a la hipertensión arterial.

Свод.

Разобрано отношение почечной опухоли к артериальной гипертенсии. Автор докладывает много историй болезни, где удаление феохромоцитомы дало улучшение артериальной гипертенсии. В нескольких случаях, где существовала компенсаторная гипертрофия одной почки, удаление другой, больной почки также улучшило артериальную гипертенсию.

BIBLIOGRAPHY

1. Beer, E., King, F., and Prinzmetal, M., Ann. Surg. **106**:85, 1937.
2. Boyd, C. Holmes, and Lewis, L. G., J. Urol. **39**:627, 1938.
3. Burrage, W., and Halsted, W., To be published.
4. Duncan, L. E. Jr., Seamans, J. H,. and Howard, J. E., Ann. Int. Med. **20**:815, 1944.
5. Goldblatt, H., J. Exp. Med. **65**:671, 1937; Ann. Int. Med. **11**:69, 1937.
6. Goodof, I. I., and Lischer, C. E., Arch. Path. **35**:906, 1943.
7. Helly, K., Münch. med. Wchnschr. **60**:1811, 1913.
8. Koster, E. F., Ohio State M. J. **41**:729, 1945.
9. Labbé, M., Tinel, J., and Doumer, Bull. et mém. Soc. méd. d. hôp. de Paris **46**:982, 1922.
10. Leadbetter, W. F., and Burkland, C. E., J. Urol. **39**:611, 1938.
11. MacKenzie, D. W., and McEachern, D., J. Urol. **40**:467, 1938.
12. Manassee, P., Virchows Arch. f. path. Anat. **133**:391, 1893.
13. Roth, G. M., and Kvale, W. F., J. Lab. & Clin. Med. **30**:366, 1945.
14. Wells, A. H., and Bowman, F. G., J. A. M. A. **109**:1176, 1937.
15. Violé, P., Ann. Otol., Rhin. & Laryng. **53**:569, 1944.
16. Young, H. H., Congenital Abnormalities, Hermaphroditism and Related Adrenal Diseases, p. 248, Williams & Wilkins Co., Baltimore, 1937.

Editorials

Barriers to Progress

SPLITTING the atom is hailed as the apotheosis of the newest scientific achievement, yet mankind has practiced upon itself the sin of self-molecular fission since the day when Cain slew Abel. Self-destruction is indeed an ancient art. Unremittingly race wars upon race; nation against nation; class against class. As a climax to what man has done to man, humankind has just run the gamut of the two most gruelling, destructive and expensive wars in the history of the world. These two conflicts alone put to shame the devastation of the ancient Titanomachy!

Even in the medical profession, that sacred calling which devotes itself to the arts of reconstruction and healing, the Dove of Peace can find no place to build her nest, nor half an olive branch to fetch from one faction to another!

This state of affairs is hardly new.

Through the recorded annals of time, as well as the garbled chronicles of mythology, the "healers" have seldom been at peace with one another. This applies to schools, guilds, medical associations, universities, colleges, societies, confraternities and individuals. A cross-section of medical history will reveal the world's most unrecognized martyrs. Many of the most criticized men of the past stand today acknowledged as among the greatest and most upright of mankind. Brother against brother has for hundreds of years been the shameful slogan of this internal war among healers, whose practices toward themselves are antithetical to their practices toward their fellow men. The entire situation is indeed an unfortunate anomaly.

We do not underestimate the good that has come from friendly, even heated rivalry among healers. The profession of medicine today, with its mighty developments, stands largely identified as the offspring of the high-minded dissensions of strong individuals. When such dissension and disagreement lead to the search for the light and sight of scientific fact, it is admirable. But when it is abased to the unreasonable disagreement and criticism of a single member or group of the profession, such action is, to say the least, unprofessional, unethical and unfortunate. History records only too many of such instances of the results of medical jealousy and intolerance.

Looking backward through the dim records of the years, the researcher finds that the physicians and the barber-surgeons of England quarreled like Kilkenny cats, until the barber-surgeons got together their own examining board. It was a fight for caste, the aristocracy of proficiency, and a merited row at that, which to this day has not yet abated. Whatever medical unity existed arose from the necessity for the physician to protect himself both from the despotism of the monarch and the ignorance of his clientele.

Even before the Revolutionary War, the fracas between men of the healing arts, physicians and surgeons in America got off to an excellent start. Fortunately for the people, both branches of the profession have held in their hearts a sufficient proportion of ethics and honor to permit them to remember that the patient came first and the practice second. So many angles of personal animosity have entered into the progress of medicine and surgery in America, as well as antagonism against certain schools, that on more than one occasion the washing of professional dirty linen has had to be done by the newspapers.

The bogey of socialized medicine that keeps threatening the medical profession should be sufficient to make every man who has ever taken the hippocratic oath band with his brothers in an honest and determined endeavor to defeat this destructive force that keeps massing its power to overwhelm medicine and surgery. But the future of medicine cannot be preserved by wishful thinking alone. There is at present a dire need to avoid the continuation of feudal attitudes in the ranks of the profession, and to stand together as one body. The unrelenting efforts of the International College of Surgeons must and will continue toward that eventual establishment of unity, better understanding and cooperation among the surgeons of the world.

MAX THOREK

The Importance of Early Diagnosis in Surgical Problems

TO characterize a disease or to diagnose it is simply to classify it within the frame of nosology or to classify it in the same way as a botanist classifies a plant, or an entomologist an insect. For the botanist and the entomologist the aim of this classification is purely scientific. For surgeons, the classification or diagnosis of clinical entities points the way to the treatment and restoration of the patient.

Frequently, classification of pathologic conditions is easy; for example, harelip is diagnosed at a glance. In many cases, however, the diagnosis presents difficulties. Inspection alone is not sufficient; palpation, percussion, auscultation, mensuration and other physical means of exploration must be mustered into service in order to arrive at a diagnosis. Such anatomicoclinical explorations enable us to discover elements of deviation from what is considered normal. In some instances it becomes necessary to resort to the aid of x-rays besides chemical, biochemical and other tests.

But even with such valuable help, the diseases of many patients remain obscure. In some cases surgical exploration alone will uncover the disease and afford opportunity for an accurate diagnosis and effective therapy.

At other times, even after the most meticulous, clinical, anatomicoradiologic and laboratory examinations, yes, even after surgical exploration, the diagnosis remains obscure. Under such condition, therapeutic decisions become uncertain and beclouded, and only further research, relentlessly pursued, will lead to a proper diagnosis.

These are elemental facts, too elemental, perhaps, but in spite of years of study and clinical observation, truth demands the admission that progress in diagnosis has been slow. This is the reason for presenting again a plea for early diagnosis at a period when the condition of the patient may be more effectively remedied.

It is with a certain degree of humility that we contemplate the collection of pathologic preparations, mute evidence of existing problems defying scientific analysis.

What were all these patients doing in the long period of time which elapsed since the first clinical manifestations of the disease and the malignant lesions they present when they come to us for consultation? The statistics of the Institute of Clinical Surgery of the University of Buenos Aires are eloquent, indeed, on this point. Subconsciously we conclude that someone was remiss somewhere along the road. A thorough analysis of these statistics reveals that these patients fall into three groups, based upon the cause for delay in making a diagnosis:

Group 1. Time lost because of the "silent" type of the disease (15 per cent of cases);
Group 2. Time lost because of the patient's delay in seeking medical aid (25 per cent of cases);
Group 3. Time lost because no diagnosis was made (50 per cent of cases).

The *first group* includes those cases in which the essentially dormant and insidious character of the disease left the patient unaware of its existence. On the appearance of definite symptoms he or she consulted a physician, but by that time the lesion was already advanced (carcinoma of the alimentary tract, uterus, breast, etc.).

In the *second group* are patients who, in spite of signs and symptoms, have wilfully delayed or avoided consultation. They have taken home remedies or sought advice from members of their families, friends, quacks or pharmacists.

The *third group* is made up of patients who consulted their physicians at the appearance of the first signs and symptoms, but were treated symptomatically, without a thorough study of the case or without definite diagnosis. In this group, which is usually treated with sedatives or other forms of symptomatic medication, the cause of the delay is the *procrastination of the physician himself.*

The painful truth should cause us to pause

and realize the fact that the great majority of our patients could derive benefit from a medical organization which would shorten the period of time between the appearance of the first symptoms and the actual diagnosis. Unfortunately, not only in books but also in the daily clinic, the chapter on diagnosis is still a catalog of numberless possibilities, to which everybody adds a sign, a painful spot, a personal observation or impression which renders interpretation and diagnosis more complicated. Hence, procrastination and wasted time.

Diseases are the result of malformations, inflammations, neoplasms, dystrophies, or degenerations of the elemental structures of the body. No issue or organ is immune. Therefore, painstaking history studies, clinical and radiologic explorations are a *sine qua non* to the fulfilment of our aims. Once the site of the pathologic process is determined, it is necessary to establish the etiologic factor responsible for the pathologic change, and, should this not be possible, surgical exploration should be unhesitatingly resorted to, in order to establish the diagnosis and thus enable the surgeon to render the best possible service to the patient.

Even so, we are often too late. It is well known that in most pathologic processes symptoms appear at a late period. In seeking for signs and symptoms, we are seeking for late manifestations of existing lesions, to find, regrettably, the confirmation of our suspicions. Most of the serious diseases silently invade the organism. Like thieves, they do not ring the bell before breaking into the house. It is a painful axiom that the words "too late" are only too frequently on our lips. This holds true both in acute processes and in chronic conditions, in fact, in all the manifestations of insidious pathology.

With the present high degree of medical knowledge and with the universal experience garnered by scientific observation, it is nevertheless impossible, as yet, to diagnose many diseases except as judged by their complications. Indeed, it is often through their complications that we diagnose pathologic conditions of the alimentary tract, pancreatitis, lithiasis, carcinoma, echinococcosis, genitourinary diseases, endocrine dyscrasias, hypertrophy of the prostate, Graves' disease, etc. The remedy? Recourse to routine, systematic physical examinations and laboratory tests and the establishment of preventive clinics and periodic health examinations.

X-ray check-up of the chests of soldiers in the Argentine Army disclosed from 3 to 5 per cent of unsuspected major pulmonary lesions.

Systematic colcoscopy enables us to discover many patients with precancerous and early malignant lesions. Systematic rectoscopy at the Institute of Clinical Surgery of the University of Buenos Aires has shown us early carcinomas 1 cm. in size.

It is a well known fact that malignancies situated in easily accessible positions are easier to find and cure than those not easily accessible. Cancers of the skin and of the mucous membranes are readily seen and are curable in about 90 per cent of cases, if promptly diagnosed and properly treated. Cancer of the internal organs is usually fatal in 90 per cent of cases. Is this so because internal cancer is more fatal than cutaneous malignancy? The answer is no. It is simply that external cancer is visible, accessible, treatable and curable if attacked therapeutically early in its development.

This is why we maintain that cancer in general offers no symptoms, or rather, only one sign—viz., local derangement of tissue structure and function. The so-called symptoms of cancer (hemorrhage, obstruction, pain) are not symptoms of cancer but symptoms of the complications of cancer. Ninety-nine per cent of the patients with carcinomas of the colon come to the clinic complaining of rectal hemorrhage, a palpable mass or intestinal obstruction. None of these—the hemorrhage, the mass, the obstruction—are symptoms of cancer. They are but the symptoms of the complications of cancer.

As stated at the outset, cancer is only a local cellular derangement, a minimal local lesion. It can thus affect the skin, the tongue, the larynx, a bronchus, the esophagus, the stomach, the intestines, the breast, the uterus, etc. How many of us recognize and operate on a cancer of the esophagus at an early stage? These patients, as a general rule, come to us

with considerable or total obstruction to deglutition after a more or less prolonged period of dysphagia. Most cases of bronchial carcinoma are seen by us in the period of their late complications. We usually diagnose cancer of the thyroid when it begins to involve the recurrent laryngeal nerves, when it has engulfed the regional lymph nodes, or when the bones have been invaded.

Patients with cancer of the pancreas or the bile ducts daily pass before our eyes like yellow ghosts gliding towards the autopsy room. In the hope of making a correct diagnosis, which is possible only by careful surgical exploration, precious time is lost. Even nowadays, one often hears and reads that it is possible clinically to distinguish an obstruction of the bile ducts from cancer or from lithiasis. We surgeons have known for a long time that this is not often the case. By facing the problem in a different way, we were able to perform the first duodenopancreatectomy in Argentina with amazing postoperative results. In order to achieve this success, the patient was operated on 23 days after the initiation of the obstruction of the bile duct and not after four or five months of jaundice, as is usually the case.

Generally, *hyperthyroid patients* are operated on at a time when the complications are the most serious and after the patients have been submitted to all types of treatment.

The majority of *amygdaloid cysts* in the neck have been treated for a long time as chronic adenopathy, because a punch biopsy was not performed in time.

When are we going to stop speaking of the medical treatment of lithiasis? And what is still more serious, how long will we go on operating on lithiasis at the period of its worst complications?

How long will we go on operating on prostatic patients when distention, obstruction and infection have already set in?

How long will sufferers from carcinoma of the rectum go on reaching us in their last stages? Thirty per cent of our cases of rectal malignancy had undergone operations for hemorrhoids a few months previously. The introduction of systematic rectosigmoidoscopy for every suspected case of hemorrhoids would avoid this humiliating mistake. The physician who diagnoses hemorrhoids should add to his diagnosis: "This patient does not have rectosigmoid cancer." Rectosigmoidoscopy enables us to make this negative assertion.

It is shocking to find that in 85 per cent of the cases of carcinoma of the stomach, laparotomy disclosed inoperability.

It is equally distressing to find that 70 per cent of the cancers of the breast belong to the advanced group.

It is sad to contemplate that echinococcosis in all its locations continues to reach us when it is betrayed by a symptom, in other words, when complications have set in.

At times it strikes us that all our work is in vain. It would seem that it is impossible to overcome this period of incomprehension. Time and again we feel like crying out: "Physicians, allow us to cure your patients!" If the symptoms are delayed and we are doomed to err, let us do so, but do so in time. Let us make systematic examinations of communities the rule. Let us find our way out of this catacomb of uncertainty. Inflexible suspicion should be substituted for the painful confirmations we make due to waiting for symptoms.

At present, we are not satisfied with diagnosing or confirming the existence of shock, acidosis or alkalosis. We must forestall their development and prevent them. Let us deal likewise with other disease entities. And when they cannot be prevented, at least let us recognize them in time to treat them effectively. Let us list known facts and what we do not know, so that we, physicians of today, may offer to the younger generation a useful synthesis as a guide and staff. Let us list what we have been terming for many years the "minimal syndrome," that is, the appellation of the smallest number of signs and symptoms necessary to classify a disease and to determine its immediate treatment, without losing unnecessary time.

If this can be achieved for all pathologic conditions, another milestone in the forward march of medicine will have been reached, and it will constitute another stage in the evolution of progressive medicine.

OSCAR IVANISSEVICH

Reflections Upon Indirect Laryngoscopy

EARLY HISTORY

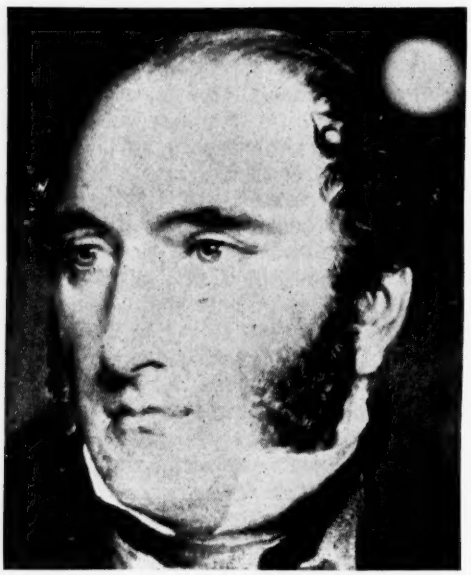
ONE of the first medical textbooks ever to be published was the compilation, largely from Greek and Egyptian sources, by that scholarly patrician Celsus.[1] In this ancient work was mentioned a looking glass or *specillum* for use in the mouth.

In 1743, a French accoucheur named Levret [2] recommended a looking glass as an aid to ligation of polypoid tumors of the ear, nose and throat.

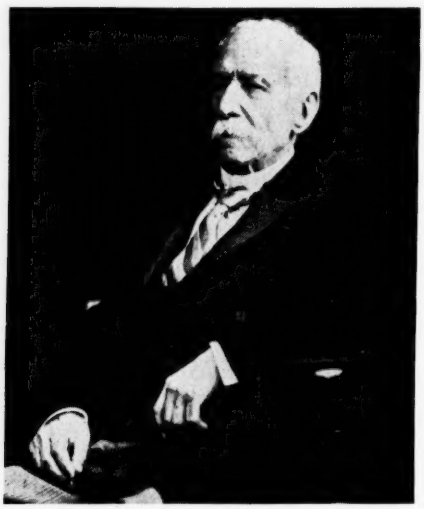
In 1807, Bozzini [3] of Frankfort described his light conductor for examination of the nasopharynx and larynx, and there were descriptions by several other authors about that time. For example, in 1832, a patient named Selligue devised a laryngoscope for use on himself by Bennati of Paris. By 1838, laryngoscopy was no secret among enlightened surgeons, particularly of the Edinburgh school. Liston [4] wrote of such a glass, as is used by dentists, on a long stalk, previously dipped into hot water, introduced with its reflecting surface downward and carried well back into the fauces.

GARCIA

Indirect laryngoscopy owes much to "el rey de los maestros de canto", as Santley described him—Don Manuel Garcia,[5] who taught singing with an advanced understanding of physiology and comparative anatomy. Madame Viardot wrote of him thus: "What do you think he brought? You would never guess. The throttles of all kinds of animals—chicken, sheep and cows. You would imagine that these would have disgusted me. But it was not so. He would give me a pair of bellows, which I would insert in these windpipes, one after another, and blow hard. Heavens! what extraordinary sounds they used to emit. The chickens' throttles would cluck, the sheep's would bleat, and the bull's would roar, almost like life." At the remembrance of these rather gruesome incidents



Robert Liston, 1794–1847.



Manuel Garcia, the Centenarian, born 1805.

[1] Celsus, Lib. vii, Cap. xii, I.
[2] Levret, Mercure de France, Paris, 1743, p. 2434.
[3] Bozzini, Der Lichtleiter, Weimar, 1807.
[4] Liston, R., Practical Surgery, London, 1839.
[5] Garcia, The Centenarian and His Times, Blackwood & Sons, London.

Madame Viardot laughs, much in the spirit, one may suppose, of the delicate Spanish beauty who applauds the thrust of the matador at a bull fight.

Garcia first practised laryngoscopy in 1854 at the age of 49. Garcia was the stage name of his father, Manuel Rodriguez, a colorful personality, who was once kidnapped by Mexican brigands. A key to the upbringing of Garcia is the following anecdote of his sister Maria: if she forgot her part, her father warned her, he would really strike her with his dagger when supposed to kill her on the stage, "and he would have done it, too", she would add.

To speak and to sing are among the highest attributes of man. Garcia taught that singing was not a question of voice production so much as of voice emission. His tuition enabled artists such as Jenny Lind, the Swedish nightingale, to do themselves justice. Jenny Lind had a faultless ear for music, and "une voix chaste et pure, pleine de grace et virginalité," but it seems that instruction from the maestro of "bel canto" helped her greatly.

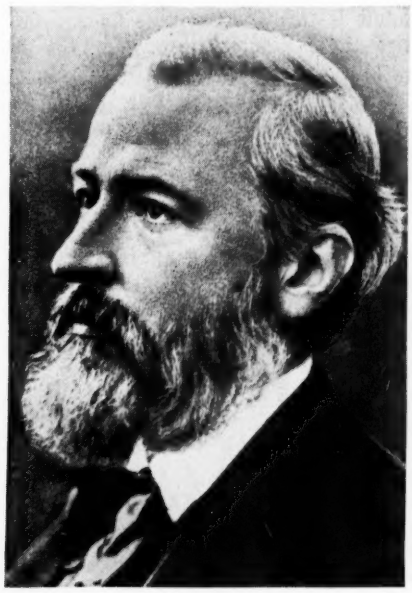
Garcia would say: "I show pupils how to sing, and the way to study. Suppose someone meets me out of doors and says, 'Can you tell me the way to Hampstead Heath?' I answer, 'I will walk there with you.' We set out, and I keep by his side, saying, 'This is the street we have to pass through. That goes in the wrong direction. Follow my instruction and you will arrive at your destination. I know the road well.' If he takes the wrong turning, that is his fault, not mine. I cannot prevent him from going off into the slums."

Garcia distinguished between three registers, the chest, medium and head voices, and two timbres, the clear or open, and the somber or closed. He defined register as being a series of consecutive sounds produced by one mechanism, each register having its own extent and sonority, which varies according to the age and sex of the individual. The rate of exhaustion of air from the chest varies in the different registers. He taught that the accent of truth, apparent in the voice when speaking naturally, is the basis of expression in singing. In dramatic singing he recommended recollection of some analogous work of pictorial art, as an occasional alternative to living the part, to induce a corresponding emotional tone to that enacted. Garcia recognized that to practice middle notes was less fatiguing than to strain the upper and lower limits of a vocalist's compass. He was always ready to advise a few weeks of absolute vocal rest, particularly before beginning instructions.

Garcia gives us a conception of the glottis in action, not as the site of ulcers, warts or palsies, but as the echo of the soul.

CZERMAK

Johann Nepomuk Czermak (1828–1873) was a physiologist with a talent for visual demonstration. His lecture theater was always a spectatorium rather than an auditorium. He examined his own vocal cords during phonation of the arabic gutturals. His enthusiasm by day and by night scandalized the worthy citizens of Pesth, but later he

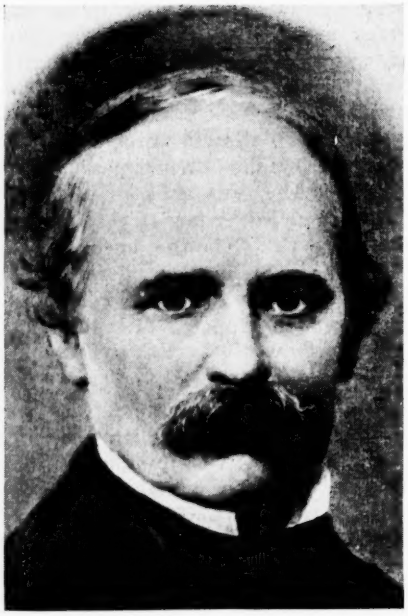


Johann Czermak, 1828–1873.

displayed the skill thus won in many cities, including some of those of Britain. He regarded the little mirror as a coy bride, known by repute and wooed by many, but brought home to medical science by him.

TÜRCK

Ludwig Türck [6] was a contemporary worker in the same field. During laryngoscopy he steadied the ring and little fingers of the right hand on the patient's face, while the other two fingers were strongly bent, holding the stem of the mirror in the same way as an illiterate person might hold a pen. The index and middle fingers are then slowly and steadily extended, "carrying the mirror well back into the fauces," elevating the soft palate and uvula and lightly touching the posterior pharyngeal wall inferiorly. Rotation of the mirror on its long axis during introduction and insertion from the angle of the mouth were duly adumbrated by this eminent neurologist of Vienna. One of Türck's illustrations of autolaryngoscopy records with the fidelity of a Grecian urn and the draperies of a Dürer the attitude of a figure seated, with the sun streaming through a window frame of which a shadow is thrown upon the floor.



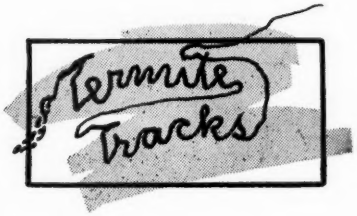
Ludwig Türck, 1810–1868.

Since these pioneers, many distinguished laryngologists at home and abroad have been their respective countries' best ambassadors. That the laryngoscopic mirror has endured all these years is a proof that "the simplicity of an operation is the measure of its perfection" (Desault, cited by Liston).

W. O. LODGE

Fig. 5.—Preliminary model for indirect laryngoscope. Buccal portion is tubular. Pharyngeal spatula can be depressed through a right angle by closure of handle. Siphon tube warms mirror. On detaching lighting unit, instrument may be sterilized by boiling. After improvements in mechanical action, and after substitution of electric heater for siphon tube, portions of metal will be cut away to allow passage of instruments.

[6] Türck, L., Laryngoscopie, Wien, 1860.



preview of . . . the twelfth assembly

Hear ye, Fellow Surgeons, the Twelfth Assembly and Convocation is a Termite disillusionment. Not one "wooden head" on the entire program. Woe is me. This seems to be a portal-to-portal convention, replete with repletion.

A myopic, personal perusal of the program of this Home-Coming event causes the entire "Termite" frame to radiate in the vicarious ownership and aura which forms the background for the celebration. Now hear ye, and assume an attitude of passive inclination. The "Termite" opines as follows:

First: this augurs well as being the most beckoning assembly to date, the inspiration for this being the Home-Coming and all that is connected with that event. The program is exceptionally well arranged and is being planned and engineered by men who are extremely capable, unselfish and have great vision. Under the general chairmanship of Dr. McNealy and his cochairmen, an imposing array of national and international speakers has been arranged. The committees in charge have done everything in their power to anticipate the needs, desires and comforts of those who will attend the Convention. It really will be an affair of multi-interests from many standpoints, such as the impressive scientific program, the operative clinics, the round table discussions and last, but not least—the opportunity to meet and become acquainted with many distinguished visitors and colleagues not only from the United States, but from all over the world. One of the most significant events will be the Dedication of the Home and Library at 8 P.M. on Thursday, October 2nd, at the Home of the College, 1516 Lake Shore Drive. Perhaps few of us realize what this Home means and also the foresight and vision on part of those who have made this possible.

As the "Termite" reviews the program of scientific papers, he is impressed by the fact that practically all of the important parts of the body have been covered. Afflictions of the face come first on the program, and that is as it should be, for "as is the face, so is the rest of the body"—in fact, in that manner, the career. The Orthopedic or Cabinet Work Department has a prominent place, and rightly so, in this day of great effort to beget speed—and speed to beget accidents—and accidents do create a great demand for the orthopedic surgeon. However, the "Termite" is somewhat nonplussed by one subject concerning fractures, spoken of as "Treatment of Fractures in Reverse." Since the "Termite" has only one speed and that only in a forward direction, he is wondering if the surgeon in question does not possess one of these new "fish-bowl", "hither-thither"—"multi-faced" types of automobile and has become a little bit bewildered as to direction and hence the topic. We don't know whether the surgeon treats fractures with his back to the patient or whether he does all the work and then gives the patient an anesthetic—or whether he has the patient walking for the first three weeks and then puts him to bed; but we shall wait and see. We are to have some very interesting surgical highlights not only from this nation, but also from England, Ireland, Spain, Denmark, Austria and South America, which adds much to the international admixture of this meeting.

The "Termite" is enchanted by one paper concerned with pyloric balance. The "Termite" hopes to learn something perhaps about just what this balance means. We have had a hard time balancing our pylorus and those of our grandchildren from the standpoint of regurgitation and whatnot, and maybe this will be the answer. The poor old gallbladder is coming in for its share of complimentary publicity; this includes a nonfunctioning gallbladder or perhaps a gallbladder that is on a sit-down strike. Several items have been labeled as follows: "Subjects—to be Announced." I am sure that this "grab-bag" assortment will be most interesting and enlightening. The lovely and important skin has been given its place in the realm of surgery, but the "Termite" is not too enthused about it as something to become sentimental about. The poor little old appendix, in spite of its modesty, is coming in for its perennial publicity. We are to learn something about the management

of chronic and acute appendicitis. It is the opinion of the "Termite" that both chronic and acute appendices pretty well manage themselves—at all times, in all climes. The "Termite" is looking forward to learning something about the changing views on acute abdominal disease. Our unchanging view on abdominal conditions is that there is always pain and it may be caused by about 75 or 80 different factors as well as vitamins. It is a well known fact that the hip may be the source of a lot of heart throbs if properly manipulated by the proper person under proper circumstances, but the "Termite" was not aware that it was so closely related to the heart that it could be afflicted with a coronary disease, but then, our motto is, "wiggle and learn." The Ice Man is coming in for his due share of importance, in that we are to learn more about refrigeration for the preservation of traumatized tissues. From our experience we can readily testify that refrigeration in many instances has gone a long way, especially around the shoulder area of the species—particularly the female. The "Chick Sale" cystitis department is going to be elucidated upon and we hope in a very satisfactory fashion for the average individual—for the irritation from that source sometimes is really time-consuming, a bit troublesome and inconsiderate, to say the least. We are looking forward to that paper with great interest and will hail any help that it will offer to the nervous, palpitating public.

The recently surgically glamorized Vagus Nerve is not to be left unnoticed, likewise some of the modest organs of the feminine body, including benign and malignant complications of the female reproductive organs, spoken of by the Chinese as "The Baby House." We are all for the complete removal of adenoid tissue where there is the slightest provocation, and we are to learn more about that at this meeting. We are to be told something about the important subject of anesthesia in obstetrics, but the way things are going now, the "Termite" believes that it is getting to be obstetrics in anesthesia—what with inhalation, intravenous, spinal, caudal and pudendal anesthetics plus hypnotism. Lister and his conceptions as compared to those of today should be interesting, and I think that we are going to find that Lister is going to be a very strong contender for first place. More is to be said about changing "blue babies to white babies"—or yellow babies or brown babies, whichever the case may be. Anyway, we are for the babies, regardless of color.

The surgical detective will take us through the maze of sleuthing in the differential diagnosis of surgical and medical jaundice, and we hope he has a biliary compass. The liver with its gall-bladder ducts and secretions certainly can keep the world and everybody in it topsy-turvy, as well as a bit tinted at times. We are to learn more and more about hypothyroidism. This meeting also bids fair to be a sort of Mecca for the fisherman, for we are to learn something about casting, from the standpoint of looking for screws, safety pins, diamonds, fish-hooks and other articles that may have lodged themselves in some of the out-of-the-way, inaccessible and untrodden paths of the body. We are also to learn something of the gelatin sponge for the control of hemorrhage. For my part, they may use all of the gelatin for that purpose, for I certainly do not like to see it before me on the table. A discussion of backaches in the form of intervertebral disc syndromes should help a lot of us who have headaches.

A new road map and guide to the Gasserian Ganglion is intriguing. Good old hypertension comes in for its usual share of interest, and we are going to learn something about "passing the buck"—or the use of the portal caval shunt in connection with portal hypotension; sounds a bit like railroad tactics to me. "Necking" is not to be left out, in that we are to learn something of the removal of the thyroglossal duct cyst. Sympathetic block and sympathetic surgery certainly have my sympathetic approval and sympathetic support. Someone must be running out of surgical cutlery, for we are to have a dissertation on tourniquet amputation.

It seems that antibiotics do have some detrimental effects at times, and we are to learn about that. We are to be told about the mechanism and management of functional uterine bleeding. However, that being a subject entirely feminine, I am afraid that we will not learn much about the absolute control of it. A testimonial concerning observation and experiences in plastic surgery in penal institutions does bring out one worth-while factor of such institutions. The colon, like all Gaul, has been surgically divided into three parts, and we shall learn about some of these parts at this meeting. Even at a strictly surgical meeting, obstetrics comes in for a second honorable mention from the standpoint of symphysiotomy. The Navy is to be heard from—which is quite fitting—and we are to learn something more about the "peep-hole" operations, commonly known as "prefrontal lobotomy".

The "Termite" is impressed with the last paper on the program which has to do with the preservation of the anal sphincter in rectosigmoid resection. There is probably not a better place to close any convention than at that end of the enteron.

Seventeen different hospitals are participating in clinics and demonstrations to make this assembly all the more valuable.

Other features are:

The Dedication, already mentioned;

The Convocation on Friday, October 3rd—always one of the most impressive events of these gatherings;

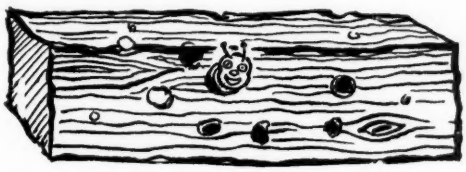
The annual banquet on Wednesday, October 1st, is to be truly a precedent-breaking affair—and the "Termite" advises you to get your tickets for this banquet as early as possible.

Elaborate plans have been made for the entertainment and the comfort of the ladies. For those who have time, either before or after. the convention, there are many interesting places to see and visit in and near Chicago. In fact, one could spend months, and then not adequately get a true idea of the beauties, resources and wonderful opportunities in and about Chicago.

One must never forget the exhibitors which add so much to the value of these assemblies. There will be some 86 exhibitors at the meeting. The exhibitions run the gamut from safety razors to cigarets. All of the familiar and well known laboratory exhibitions will be there, plus some new names. By a strange coincidence, 21 letters of the alphabet will be represented by these exhibitors, starting with "a" and ending with "z".

Please bear in mind that surgical and medical progress owes much to the cooperation of the manufacturers and their development of instruments and paraphernalia, which have made the practice of medicine and surgery easier and more efficient. Your time will be well invested in a visit to the exhibits, thus cooperating with the "handmaidens", so to speak, of medical and surgical progress.

THE TERMITE



SEE YOU AT THE ASSEMBLY

PROGRAM OF SCIENTIFIC ACTIVITIES OF THE TWELFTH NATIONAL ASSEMBLY AND CONVOCATION OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS

PALMER HOUSE, CHICAGO, SEPT. 28–OCT. 4, 1947

The following is a partial list of the **Scientific Papers** which will be read:

Adson, Alfred W., M.D., F.A.C.S., "Neuralgias of the Face: Diagnosis and Treatment."

Allen, Frederick M., M.D., "Refrigeration for the Preservation of Traumatized Tissues."

Anderson, Roger, M.D., F.A.C.S., F.I.C.S., "Treatment of Fractures in Reverse."

Andrews, Albert H., Jr., M.D., and **Holinger, Paul**, M.D., "Classification of Postoperative Bronchopulmonary Complications as Basis for Therapy."

Asencio, Fernando, M.D., F.I.C.S., "Acute Vascular Thrombosis of the Small Intestine."

Bailey, Hamilton, F.R.C.S. (Eng.), F.I.C.S. (Hon.), F.A.C.S., F.R.S.E., Subject to be announced.

Bartlett, Willard, Jr., M.D., F.A.C.S., "The Concept of Pyloric Balance in Ileus."

Barraquer, Ignacio, M.D., "Technic of Cataract Extraction."

Bates, William, M.D., F.A.C.S., F.I.C.S., "The Nonfunctioning Gallbladder."

Berg, Albert A., M.D., F.I.C.S., "The Vagus Nerve—Its Importance to the Radical Cure of Gastric and Duodenal Ulcer."

Berkay, Feyyaz, M.D., F.I.C.S., "Pseudocysts of the Pancreas and External Drainage."

Bitschai, Jacob, M.D., F.I.C.S., "Surgical Pathology and Operative Treatment of Some Prostatic Diseases."

Blady, John V., M.D., "The Treatment of Metastatic Cancer in Cervical Lymph Nodes."

Callahan, James J., M.D., F.A.C.S., F.I.C.S., "Fractures of the Ankle with Special Reference to the Fractures of the Internal Malleolus."

Cannaday, John E., M.D., F.A.C.S., F.I.C.S., "The Use of Cutis Grafts in Surgery."

Carranza, Felipe, M.D., F.I.C.S., "Electrosurgical Treatment of Carcinoma of the Penis."

Chandler, Fremont A., B.S., M.D., F.A.C.S., "Coronary Disease of the Hip Joint."

Cole, Warren, M.D., F.A.C.S., "Surgical Treatment of Benign Lesions of the Stomach."

Collins, Donald C., M.D., F.A.C.S., F.I.C.S., "Present Concepts in the Management of Both Chronic and Acute Appendicitis."

Compere, Edward L., M.D., F.A.C.S., F.I.C.S., "Aseptic Necrosis of Bone Following Trauma."

Cope, Zachary, B.A., M.D., M.S. (Lond.), F.R.C.S. (Engl.), "Changing Views on Acute Abdominal Disease."

Counseller, Virgil, M.D., F.A.C.S., "The Surgical Aspects of Endometriosis."

Crossman, L. W., M.D., F.A.C.S., F.I.C.S., "Refrigeration for the Preservation of Traumatized Tissues."

Darget, Raymond, M.D., F.I.C.S., "The Treatment of Inveterate Cystitis by Infiltration of the Nervae Erigentes and Denervation of the Bladder."

Dragstedt, Lester, B.E., M.S., Ph.D., M.D., "Section of the Vagus Nerve to the Stomach in the Treatment of Peptic Ulcer."

Falls, Frederick, M.D., F.A.C.S., "Carcinoma and Uterine Fibromyomata."

Gillis, Leon, M.D., F.R.C.S., F.R.C.S.E., D.L.O., F.I.C.S., "Neoarthrosis of the Shaft of the Humerus for Amputations around the Elbow Joint."

Greenhill, J. P., B.S., M.D., F.A.C.S., F.I.C.S., "Anesthesia in Obstetrics."

Hedri, Endre, M.D., F.I.C.S., "Results of Intramedullary Fixation Following the Method of Küntscher in Fractures of the Femoral Diaphysis."

Hertz, John, M.D., F.I.C.S., "Recent Developments in the Diagnosis of Thyrotoxicosis."

Hess, Elmer, M.D., F.A.C.S., F.I.C.S., "Treatment of Prostatic Carcinoma."

Ivanissevich, Ambassador Oscar, M.D., F.A.C.S., F.I.C.S. (Hon.), "Patent Ductus Arteriosus."

Ivy, Andrew C., M.D., "The Differential Diagnosis of Surgical and Medical Jaundice."

Jackson, Arnold, M.D., F.A.C.S., "Recent Developments in the Treatment of Hyperthyroidism."

Jackson, Chevalier L., M.D., F.A.C.S., F.I.C.S., "Surgical Technic in Treatment of Pulsion Diverticulum of the Hypopharynx."

Jenkins, Hilger Perry, M.D., F.A.C.S., "Gelatin Sponge for Control of Hemorrhage."

Jirasek, Arnold, M.D., F.I.C.S. (Hon.), "Injuries of the Soft Tissue of the Knee."

Lewin, Philip, M.D., F.A.C.S., "Intervertebral Disk Syndrome."

Lodge, William Oliver, M.D., F.R.C.S. (Edin.), D.O.M.S., R.C.P. and S. (Engl.), F.I.C.S., "Surgical Ambidexterity."

Lord, Jere, Jr., M.D., F.A.C.S., "The Use of Portacaval Shunts in the Management of Portal Hypertension."

Lovelace II, W. R., A.B., M.D., M.S., F.A.C.S., F.I.C.S., "Experience in Removing Thyroglossal Duct Cysts."

McCarty, William Carpenter, Sr., M.D., F.I.C.S. (Hon.), "Diagnosis of Abdominal Neoplastic Diseases."

Maxeiner, Stanley R., M.D., F.A.C.S., "Tourniquet Amputations."

Nissen, Rudolph, M.D., F.I.C.S., "Recent Advances in Surgery of the Thoracic Esophagus."

Novak, Emil, M.D., F.A.C.S., "Mechanism and Management of Functional Uterine Bleeding."

Oberhelman, Harry A., M.D., F.A.C.S., "Congenital Hypertrophic Pyloric Stenosis."

O'Donoghue, John B., M.D., "Pneumoperitoneum, Its Occurrence, Etiology, Diagnostic Significance and Treatment."

Potts, Willis J., M.D., F.A.C.S., "Surgical Relief of Cyanosis Due to Congenital Heart Disease."

Pick, John F., B.S., M.D., F.I.C.S., "Observations of Ten Years' Experience in Plastic Surgery at Penal Institutions."

Rienhoff, William F., Jr., M.D., "Surgical Treatment of Hyperparathyroidism."

Rios, J. Almeida, M.D., F.I.C.S., "Surgical Treatment of Osteomyelitis."

Rosser, Curtice, M.D., F.A.C.S., F.ICS. "Management of Surgical Lesion of the Left Colon."

Schlaepfer, Karl, M.D., F.I.C.S., "The Use of Tantalum Wire in Surgery."

Sisson, August Maria, M.D., F.I.C.S., "A New Technic to Produce Better Apical Collapse of the Lung by Incision Through the Mediastinal Pleura Reducing the Hilomediastinal Triangle."

Spain, Alex W., M.D., F.R.C.O.G., F.I.C.S., "Symphysiotomy in Modern Obstetrics."

Stein, Irving F., Jr., A.B., M.S., M.D., "Clinical and Physiologic Aspect of Vagotomy."

Steindler, Arthur, M.D., F.A.C.S., "Pathology and Treatment of Scoliosis."

Strauss, Alfred, M.D., F.I.C.S., "Preliminary Ileostomy as an Important Aspect of Colon Surgery Based on 30 Years of Clinical Experience."

Watts, James W. B., B.Sc., M.D., F.A.C.S., F.I.C.S., "Prefrontal Lobotomy—the Complications and Their Treatment."

White, Charles, M.D., F.A.C.S., F.I.C.S., "Preservation of the Anal Sphincter in Rectosigmoid Resections."

Zinner, Nándor, M.D., F.I.C.S., "Arthroplasty of the Great Joints."

Foreign Guests

Asencio, Fernando, M.D., F.I.C.S., Chief of the Surgical Department, Bayamon District Hospital, Bayamon, Puerto Rico.

Bailey, Hamilton, F.R.C.S. (Eng.), F.I.C.S. (Hon.), F.A.C.S., F.R.S.E., International Vice-President, International College of Surgeons; Surgeon, Royal Northern Hospital, London; Surgeon and Urologist, County Hospital, Chatham; Senior Surgeon, St. Vincent's Clinic and the Italian Hospital; Consulting Surgeon, Essex County Council and Clacton Hospital; formerly External Examiner in Surgery, University of Bristol; and General Nursing Council. London, England.

Barraquer, Ignacio, M.D., Professor of Ophthalmology, University of Barcelona, Spain.

Bitschai, Jacob, M.D., F.I.C.S., Professor of Surgery and Neurosurgery, Alexandria, Egypt.

Berkay, Feyyaz, M.D., F.I.C.S., Assistant Professor of Surgery at the First Surgical Clinic of the University of Istanbul, Turkey; Representative of the Turkish Chapter of the International College of Surgeons; Member of the Turkish Medical Society and Academy.

Carranza, Felipe, M.D., F.I.C.S., Professor of Cancerology, Roffo Institute, Buenos Aires, Argentina.

Cope, Zachary, B.A., M.D., M.S. (Lond.), F.R.C.S. (Engl.); Late Hunterian Professor and Arris and Gale lecturer, Royal College of Surgeons; Surgeon to St. Mary's Hospital, Paddington; Senior Surgeon to the Bolingbroke Hospital, Wandsworth Common.

Darget, Raymond, M.D., F.I.C.S., Professor of Urology, Faculty of Medicine, University of Bordeaux; Chief of Urologic Service, L'Hospital du Tondu, Bordeaux, France.

Hedri, Endre, M.D., F.I.C.S., Professor of Surgery, Budapest Clinic, University of Budapest, Hungary.

Hertz, John, M.D., F.I.C.S., Copenhagen, Denmark, Member of Scandinavian College of Surgeons, Copenhagen Society of Surgeons and the Danish Surgical Society.

Gillis, Leon, M.D., F.R.C.S., F.R.C.S.E., D.L.O., F.I.C.S., Senior Surgeon, Queen Mary's Hospital, Roehampton, England.

Ivanissevich, Ambassador Oscar, M.D., F.A.C.S., F.I.C.S. (Hon.); Professor and Head of Department of Surgery, National Medical University, Buenos Aires, Argentina.

Lodge, William Oliver, M.D., F.R.C.S. (Edin.), D.O.M.S., R.C.P. and S. (Engl.), F.I.C.S.; Hon. Surgeon to Ophth. and Aural Departments, Royal Halifax Infirmary; Ophth. Surgeon, St. Luke's Hospital, Bradford; Aural and Ophth. Surgeon, Halifax General Hospital; Laryngologist, Rutson Hospital, Northallerton; Consulting Ear, Nose and Throat, Bingley Hospital; Halifax, England.

Jirasek, Arnold, M.D., F.I.C.S., Professor of Surgery and head of Department of Surgery of the University of Prague, Czechoslovakia; First International President of the International College of Surgeons.

Rios, J. Almeida, M.D., F.I.C.S., Assistant Professor of Orthopedics, National Medical University, Rio de Janeiro, Brazil.

Sisson, August Maria, M.D., F.I.C.S., Director and Chief of the Surgical Pulmonary Tuberculosis Service, Instituto de Tisiologia Do Rio Grande Do Sul, Porto Alegre, Brazil.

Spain, Alex W., M.D., F.R.C.O.G., F.I.C.S., Master, National Maternity Hospital, Dublin; Examiner in Obstetrics and Gynecology, National University and Apothecaries' Hall of Ireland; President of Section of Obstetrics, Royal Academy of Medicine in Ireland, 1944–1946; Dublin, Ireland.

Zinner, Nándor, M.D., F.I.C.S., Professor of Orthopedics, University of Budapest, Hungary.

HOME DEDICATION

1516 Lake Shore Drive

Thursday, October 2, 1947

8:00 p.m.

The Dedication of the Home of the International College of Surgeons and of the United States Chapter will take place at 8:00 p.m. on Thursday, October 2, 1947.

The Blair mansion has been purchased for College activities. It is located at 1516 Lake Shore Drive, Chicago.

Buffet refreshments will be served, following the dedication ceremonies.

Tickets for the dedication should be obtained at the earliest possible date at the ticket desk on the Assembly floor of the Palmer House. There will be no charge.

COOK COUNTY HOSPITAL DAY

In conjunction with Cook County Graduate School of Medicine and Hektoen Institute for Medical Research

Friday, October 3, 1947
9:00 a.m. to 5:00 p.m.

The great Cook County Hospital of Chicago, where J. B. Murphy, Nicholas Senn, Willis Andrews, Christian Fenger, Ludwig Hektoen and many other notables in surgery and correlated sciences pioneered, has reserved this day for operative clinics, round table discussions and demonstrations.

Under the direction of
Dr. Karl A. Meyer, F.A.C.S., F.I.C.S.

Arrangement Committee
Dr. Manuel Lichtenstein, F.A.C.S., F.I.C.S., Chairman
Dr. James J. Callahan, F.A.C.S., F.I.C.S., Co-chairman
Dr. Samuel J. Fogelson, F.A.C.S., Co-chairman

Guest Speaker
Prof. Dr. Arnold Jirasek, University of Prague, Czechoslovakia

FRIDAY, OCTOBER 3, 1947

COOK COUNTY HOSPITAL — OPERATING ROOMS

Entrance 7th Floor

Place	Surgical Amphitheater	A	B	C
Capacity	125	18	18	18
Clinic	Gen. Surgery Operative	Gynecology Operative	Fractures Operative	Gynecology Operative
Hours 8 to 12:30	Dr. Rosi Dr. K. A. Meyer Dr. McNealy Prof. Jirasek	Dr. Falls Dr. Kantor Dr. Lash	Dr. Callahan Dr. Scuderi Dr. Apfelbach	Dr. Greenhill Dr. Fishmann Dr. Sered Dr. Reich
1:30 to 3:30	Dr. O'Donoghue	Colon Surgery		

FRIDAY, OCTOBER 3, 1947

COOK COUNTY HOSPITAL — OPERATING ROOMS

Entrance 7th Floor

D	E	F	G	Medical Amphitheater
18	35	18	35	150
Gen. Surg. Operative	Gen. Surg. Short Papers	Gen. Surg. Operative	Gen. Surg. Short Papers	Gen. Surg. Short Papers
Dr. Koucky Dr. Lawler Dr. R. Vaughan	Dr. Rivers Dr. Christofferson Dr. Green Dr. H. I. Meyer	Dr. Zimmerman Dr. Lichtenstein Dr. Jacobson	Dr. Theis Dr. Pickett Dr. Seed Dr. C. Guy	8–10 Round Table Discussion Gastric Surg. Dr. S. Fogelson Dr. A. Vaughn Dr. F. H. Straus 10–12 Round Table Discussion Colon Surg. Dr. Bacon Dr. Gilchrist
1:30 to 3:30				Neurosurgery Dr. R. Klemme Dr. Voris

FRIDAY, OCTOBER 3, 1947

COOK COUNTY HOSPITAL — CHILDREN'S HOSPITAL
Wood Street Facing Flournoy

Place	Amphitheatre Basement	O. R. "A" 8th Floor	O. R. "B"
Capacity	125	25	25
Clinic	Orthopedics	Gen. Surgery	Orthopedics
Hour 8 to 12	Dr. C. L. Hall Round Table Discussion Orthopedic Problems. Dr. P. Lewin Dr. F. G. Murphy Dr. F. Shapiro Dr. H. Kelikian Dr. D. Miller	8–10 Dr. H. Oberhelman 10–12 Dr. E. Fell Dr. H. Allen	8–10 Dr. A. Conley Dr. Dan Miller

COOK COUNTY GRADUATE SCHOOL OF MEDICINE

427 S. Honore Street

Place	1st Floor	2nd Floor	Annex "A"	Annex "B"	Annex "D"
Capacity	50	200	25	25	25
Hour 8 to 12	9:00–10:30 Dr. Volini Medical Problems in Surgical Patients 10:30–12:00 Dr. Arkin Surgical Lesions in the Gastro- intestinal Tract X-ray Studies	8:00–10:00 Round Table Discussion Gallbladder Surgery Dr. M. Behrend Dr. A. Behrend Dr. M. Thorek 10:00:12:00 Round Table Discussion Colon Surgery Dr. W. Wayne Babcock Dr. O'Donoghue	8:00–9:30 Dr. Kozoll Pre and Post- operative Management in Gastro- intestinal Surgery 9:30–10:45 Dr. Seed Management of Thyro- toxicosis 10:45–12:00 Dr. Mackler Anatomic and Physiologic Considera- tions in Chest Surgery	8:00–9:30 Dr. Hendricks Technical Aspects of Colon Surgery Colostomy 9:30–11:00 Dr. McMillan Recurrent Hernia 11:00–12:00 Dr. Nechtow Sterility	9:00–10:30 Drs. Boodel and Howser Anatomic Con- siderations in Surgery of the Colon and Rectum 10:30–12:00 Dr. Heller Anatomic Considera- tions in Sur- gery of Vari- cose Veins
1:30 to 4:30	1:30–3:00 Dr. Rosi Vagotomy Clinical Results	1:30–3:00 Round Table Discussion Cancer of the Breast Dr. W. C. McCarty Dr. McNealy	1:30–3:00 Dr. R. F. Murphy Management of Shock	1:30–3:00 Dr. Requarth Treatment of Burns	1:30–3:00 Dr. P. Thorek Anatomic Considera- tions in Sur- gery of the Biliary Tract

COOK COUNTY GRADUATE SCHOOL OF MEDICINE *(Continued)*

3:00–4:30 Dr. M. Lichtenstein Intestinal Obstruction	3:00–4:30 Round Table Discussion Gastric Surgery Dr. L. Appleby Dr. K. A. Meyer	3:00–4:30 The Blood Bank at Cook County Hospital Dr. H. Wallin	3:00–4:30 Dr. Stein Physiologic Considerations in Vagotomy	3:00–4:30 Dr. Glassman Anatomic Considerations in Gastric Surgery

Friday, October 3, 1947

DEPARTMENT OF PATHOLOGY OF THE COOK COUNTY HOSPITAL AND HEKTOEN INSTITUTE

Amphitheatre—Morgue Building

Capacity 220

8:00–8:30 **Dr. William Mavrelis**
Surgical Pathology of Carcinoma of the Breast.

8:30–9:30 **Stephen O. Schwartz, M.D.**
Splenectomy in Hematologic Conditions.
Symposium on Differential Diagnosis of Surgical and Medical Jaundice.

9:00–9:40 **Dr. Hans Popper**
Applications of Histologic and Functional Laboratory Methods.

9:40–10:20 **Dr. Frederick Steigmann**
Acute Jaundice.

10:20–11:00 **Dr. Edmund F. Foley**
Chronic Liver Diseases.

11:00–11:10 Discussion

11:10–12:00 **Drs. Italo F. Volini and Hans Popper**
Clinical Pathologic Conference—Subject to be announced.

1:30–2:00 **Dr. Donald D. Kozoll**
Nitrogen Metabolism in Surgical Patients.

2:00–2:45 **Dr. William Hoffman**
Salt and Water Requirements in Pre- and Postoperative Management.

2:45–3:30 **Drs. Alex B. Ragins and Harold Cohen**
Surgical Pathology of the Stomach.

3:30–4:00 **Dr. Paul B. Szanto**
Surgical Pathology of the Pancreas.

Friday, October 3, 1947

FANTUS CLINICS OF THE COOK COUNTY HOSPITAL

Out-Patient Department.

Hour	Clinic
9:00–12:00	Fracture "Follow-Up" Clinic
1:30 to 3:30	Gynecology Clinic Drs. Reich, Button, Nechtow. Rectal Clinic Drs. Rosi, Larkin. Breast and General Tumor Clinic Dr. A. Vaughn and Dr. S. Wolfson. Hand Clinic Drs. Allen and Associates.

Banquet

On Wednesday, October 1, 1947, the annual Banquet of the College will be held in the Grand Ballroom of the Palmer House at 6:30 p.m. The Entertainment Committee has made great preparation for this Banquet, and have procured many prominent speakers. Dr. Preston Bradley, whose outstanding achievements are well known, will preside.

All members of the College and all other surgeons and physicians of Chicago and its environs are cordially invited together with their families. Table reservations for groups may be arranged. A delightful evening including music and entertainment is assured.

Program of Entertainment for Ladies

The Ladies' Entertainment Committee is preparing a program of entertainment for all the ladies attending the Assembly. Each lady is asked to register immediately at the Ladies' Headquarters at the Palmer House. The program will be published in detail at a later date. It will be necessary to make reservations for some of the events scheduled, so that prompt registration is essential.

Among the various functions contemplated are sightseeing tours of Chicago and its surrounding area, teas, a fashion show and a variety of absorbing events.

Information

Registration:

Everyone attending the Assembly must register. Registration will begin at the Palmer House (see bulletin board) on Sunday, September 28, and continue throughout the Assembly.

Registration by Card: To facilitate registration and to save time, those who have made hotel reservations will be contacted by the Registration Committee, Dr. Willard H. Chipman, chairman.

NEWS NOTES

The National Headquarters of the American Red Cross, Washington, D. C., wishes to obtain copies of certain **back issues of the** *American Journal of the Medical Sciences* to send them to the International Red Cross for use by the Netherlands Red Cross Societies. Communications should be addressed to the American Red Cross, Chicago Chapter, Community Service to Camps and Hospitals, 529 South Wabash Avenue, Chicago, Illinois.

The Mexican Society for Study of Tuberculosis and Diseases of the Respiratory Tract at a recent meeting elected Dr. Alejandro Celis as President, Dr. Ermilo Esquivel as Secretary and Dr. Manuel Alanso de la Fuente as Treasurer for the present year.

The **Second Mexican Congress of Medicine** will take place in Mexico City from Nov. 9–15 of this year, under the sponsorship of the Secretariat of Health and Public Assistance. Prof. Dr. Gustavo Argil, F.I.C.S. (H.C.), is President of the Governing Committee of the Congress and Prof. Dr. Francisco Fonseca, F.I.C.S. (Hon.), is Treasurer. Both are members of the General Hospital of Mexico and of the staff of the National University of Mexico.

The Academy of Medicine in Turin celebrated its centennial this year under the chairmanship of Professor Gamma. Vice-President Professor Luigi Ferrio painstakingly collected the material required to present a history of the Academy of its first 100 years. The old home of the Academy had been destroyed by bombing during the War, but much of the necessary material was finally found at other libraries and institutions of Turin not damaged. Sir Alexander Fleming was a guest at the anniversary and recounted the discovery, the therapeutic indications and the contraindications of penicillin at a most interesting conference.

The Bicentenary of the Rotunda Hospital of Dublin, the oldest obstetric hospital in the British Isles, was held during July of this year. It was attended by internationally known medical personages from many countries. Visitors included Prof. H. J. Stander of Cornell University; Prof. F. C. Irving of Harvard; Prof. Subodh Mitra of Calcutta; Dr. J. I. Hofbauer of Cincinnati; Prof. H. L. Sheehan of Liverpool; Prof. W. A. Scott of Toronto; Prof. Henri Bedrine, Lisle; Dr. J. V. O'Sullivan of London; Dr. Isidore Rubin of New York; Prof. Axel Westman of Stockholm; Prof. Bernard Zondek of Jerusalem; Dr. Peter Bishop of London; Prof J. S. Browne of Montreal; Prof. Ebbe Brandstrup of Copenhagen; Prof F. J. Browne of London, and Prof. Dugald Baird of Aberdeen.

The Fifth International Congress of the **Medical Women's International Association** was held June 24–30 in the Indian Institute at Amsterdam, Netherlands. Aside from participating in and attending the scientific programs, the visitors enjoyed the beauties of this old city and its surroundings.

The annual meeting of the **Association of Surgeons of Britain and Ireland** will be held July 3–5 at Oxford, England. Papers to be presented will include discussions on surgical relief of pain (excluding sciatica) by Mr. J. H. Kellgren, Prof. Geoffrey Jefferson and Prof. J. Paterson Ross, ulcer and cancer of the cardiac end of the stomach and of the lower end of the esophagus. Other speakers will include Mr. R. Allison, Mr. T. Holmes Sellors, Mr. Vernon Thompson and Mr. N. C. Tanner.

The **Third American Congress on Obstetrics and Gynecology** will be held in the St. Louis, Missouri, Municipal Auditorium from Sept. 8–12 of this year. General Chairman is Dr. William F. Mengert of Dallas, and general program secretary Dr. A. W. Diddle, also of Dallas. The medical sub-section is headed by Dr. Ralph A. Reis of Chicago, assisted by Dr. John I. Brewer of Chicago. The medical educator's sub-section is headed by Dr. Herbert F. Traut of San Francisco and the hospital administrator's sub-section by Dr. S. A. Cosgrove of Jersey City.

The Canadian Medical Association will hold its annual meeting June 23–27 at the Royal Alex-

andria Hotel, Winnipeg, under the presidency of Dr. Wallace Wilson of Vancouver. Round table conferences are scheduled for the mornings of June 25 to 27 and sectional meetings for the afternoons of these same days. A panel discussion on the provision for medical care is scheduled for Thursday evening, June 26. Speakers include Dr. Edgar J. Huenekens, Dr. Robert E. Priest and Dr. Abe B. Baker, all of Minneapolis; Prof. John M. McMichael of London, England; Dr. Paul O'Leary of Rochester, Minnesota; Dr. Warren H. Cole of Chicago; Dr. Leo G. Rigler of Minneapolis, and Dr. E. Bruce Tovee of Chicago.

The American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery will meet at the Hotel Mayflower, Atlantic City, on June 11. An impressive program has been arranged; speakers include Dr. Norman N. Smith of New Haven, Connecticut; Dr. Samuel Turchick, of Bridgeport, Connecticut; Dr. Samuel F. Kelley, of New York City; Dr. Joseph G. Gilbert and Dr. Joseph S. Silverberg of Brooklyn; Dr. John F. Pick of Chicago, and Dr. Francis W. White of New York City, who will open the general discussion.

The **American Cancer Society** has announced that nearly $3,000,000 in grants for cancer research have been distributed, during 1945 and 1946, to 48 universities, hospitals and other institutions for 240 research projects. The basic element of the cell growth has been the special interest of research. A special panel of cell chemistry has estimated that $500,000 could well be spent annually in research in this field alone. Other projects which require tremendous amounts of research include the possible effect on malignant growth of the enzyme system, the effect of hormones and nucleotides on enzyme action and tracing the action of viruses in the cell through use of radioactive substances. The Society appropriated $100,000 for the purchase of stable isotopes.

The **Fifth Panamerican Conference of the Red Cross** was held on Feb. 9 in the beautiful city of Caracas, the capital of the Republic of Venezuela. The President of the Republic, Don Romulo Betancourt, opened the conference with a discussion of its activities in peace and war. Mr. Rafael Isava Núñez, President of the Red Cross of Venezuela, gave the address of welcome. Mr. James T. Nicholson, representing the American National Red Cross, stressed the freedom of the organization from political, racial and religious prejudices. The conference appointed five committees to study such problems as hygiene, public and social assistance, organization and membership and financial relief of the destitute. At the conclusion of the conference, the delegates voted to hold the sixth conference in Mexico City.

Chapter News

The following members of the **Peruvian Chapter** of the International College of Surgeons were elected officers of the Peruvian Academy of Surgery for the present year: Dr. Alberto Sabogal, President; Dr. César Heraud, General Secretary; Dr. Enrique Manchego, Vice-President; Dr. José Vélez Díez Canseco, Secretary of the Meetings; Dr. Jorge de Romaña, Secretary for Scientific Activity; Dr. Gerardo Lozada, Treasurer; Dr. Lucas Molina, Librarian; and Dr. Alex Higginson, Director of Publication. As Voters were elected Dr. Ricardo Angulo, Dr. Luis M. Delgado, Dr. Víctor Bazul, Dr. Rolando Colaretta and Dr. Alfredo D. Curotto.

Professor A. Mario Dogliotti, president of the **Italian Chapter** of the International College of Surgeons, was given a dinner and reception by the Chicago Chapter on May 5 in the Gold Coast Room of the Drake Hotel. Prof. Dogliotti, head of the department of surgery of the University of Turin, Italy, is visiting in the United States at the invitation of the Lahey Clinic and the Massachusetts General Hospital, Boston.

HONORS

The National Academy of Medicine of Lima, Peru, elected as honorary member, by unanimous vote, **Prof. Dr. Manuel A. Manzanilla**, F.I.C.S. (Hon.), Professor of Clinical Surgery at the National University of Mexico and International Vice-President of the International College of Surgeons.

The Mexican Committee for the Fight against Tuberculosis presented a medal to **Dr. Víctor Fernández Manero**, F.I.C.S. (H.C.), to honor his outstanding services in fighting the white plague in Mexico.

Vice Admiral Ross T. McIntire (MC), U.S.N. (retired), F.I.C.S., was awarded the United States of America Typhus Commission Medal for exceptionally meritorious service as a member of the United States of America Typhus Commission

from August 1942 to June, 1946. The citation adds that through his expert knowledge he contributed to the formulation and operation of the commission's research and control of typhus fever in all theaters of operation. His constant devotion and interest in the problems of typhus was of invaluable aid in the control of this disease and in the protection of the health of military and civilian personnel.

Col. Dr. William R. Lovelace II, F.I.C.S., of Albuquerque, New Mexico, a member of the Board of Directors of América Clínica, has been awarded the Legion of Merit for his outstanding services during 1943 to 1945 as Chief of the Aeronautics Medical Laboratory, Division of Engineering, during which time he developed oxygen and stretcher services for the Air Force.

Dr. Francisco Najera, F.I.C.S. (Hon.), has been decorated by the Government of Luxembourg with the Great Cross of the Oak Crown, also with the Insignia of the City of Liège, while on a recent tour in Europe.

Dr. Hugh S. Cumming has just retired from the directorship of the Pan American Sanitary Bureau, the oldest international public health organization in the world, whose destinies he guided for more than 26 years. His successor, Dr. Fred L. Soper, was elected on Jan. 24, 1947, during the XII Pan American Sanitary Conference. Messages of greeting and congratulation were sent to Dr. Cumming from all over the world, particularly from the Americas. His devotion to the work, his undivided attention and meticulous care in solving the innumerable and momentous problems concerned with the health of the populations, earned him the gratitude of all who knew and worked for him. In a special resolution, the Governing Board of the Pan American Union extended to Dr. Cumming its cordial greetings and congratulation, and expressed its appreciation of the exemplary devotion with which, during 25 years, he furthered the cause of health in the American Republics on the basis of reciprocal cooperation. The most sincere wishes of his coworkers and friends follow him to his well earned rest.

URGENTLY NEEDED

Back issues of the Journal of the International College of Surgeons

May – June 1942
January – February 1943
January – February 1945
March – April 1945
January – February 1946

Any issue in 1940–1941–1942.

Please mail to:

Journal, International College of Surgeons
Circulation Office
1776 Broadway—New York 19, N. Y.

Obituaries

DR. HERMAN DE LAS CASAS

1901–1947

On March 27, 1947, one of the most brilliant surgical careers in South American history was cut off, in its prime, with the tragic death of Dr. Herman de Las Casas in an airplane accident near the Caracas airport. We are told that on that very day he had been elected a Member of the National Academy of Medicine of Venezuela, an honor which marked another milestone in his already illustrious career.

Herman de Las Casas was born in Caracas in 1901, of a lineage long prominent in the historical records of Spain and France. His immediate ancestry traced back to Mariana de Las Casas, who arrived in South America with Columbus and settled in Venezuela.

He received his early education in a French Catholic school, and was graduated from the University of Caracas with high honors in medicine. His was the singular accomplishment of winning first place in competitive examinations for internships in both Medicine and Surgery.

From the outset he showed conspicuous skill in the practice of general surgery. He was first associated with Hospital Vargas, in Caracas, rising in 10 years from the position of Resident Surgeon to Chief of Clinical Surgery. He then spent a year (1928–1929) on the Faculty of Paris and as orthopedic surgeon of the Franco-American Hospital of Berk, France. Returning to Venezuela, he founded the Department of Traumatic and Orthopedic Surgery at Hospital Vargas, where he resumed his work as Chief Surgeon and Chief Traumatologist. He founded the School of Medicine and Bone Surgery and the Chair of Orthopedics and Traumatology in the Central University of Venezuela, and taught surgical pathology and clinical traumatology. At the time of his death he had become Dean of the Faculty of Medical Sciences. His other activities included the Council of the Faculty of Medicine, the Directive Board of Hospitals, the Ministry of Public Works and Chief of Equipment in Social Security. He was co-founder of the Institute of Experimental Surgery and the Department of Anatomic Technic, and acted as representative of the Ministry of Education on the Board of the National School for Nurses. He also founded the Red Cross Orthopedic Service of Venezuela and gave his services freely to the Venezuelan Red Cross.

Dr. de Las Casas contributed widely to the surgical literature, and left unpublished a book-length work entitled "A Treatise on Surgical Pathology."

Early in the life of the International College of Surgeons, Dr. de Las Casas became one of its most zealous and wholehearted protagonists, working actively in the interests of the College in Venezuela and South America. He served as Honorary National President and Regent, International Vice-President, was Chairman of the Committee of Exchange and Associate Editor of the **Journal of the International College of Surgeons.** Always interested in the progress of scientific education, Dr. de Las Casas found in the ideals and scope of the program of the International College of Surgeons inspiration and stimulus to the progress of surgery and science.

All who knew him feel that, brilliant as was his surgical and public career, it ended long before he had reached the limit of his remarkable ability, and that, had he lived, every year would have added more and more honors to his name.

The heartfelt sympathy of the International College of Surgeons is extended to the grieving family of our renowned and gifted co-worker and friend, Dr. Herman de Las Casas.

RAFAEL ANGEL GRILLO OCAMPO

M.D., F.I.C.S.

The tragic death of Dr. Rafael Angel Grillo Ocampo in a recent airplane accident of a D.C.4 in Maryland, which cost some 60 other lives, has shocked the entire medical profession. Dr. Grillo was not only a noted physician of Costa Rica, an outstanding surgeon, gynecologist and obstetrician, but also extremely active in the general welfare of his country to the point where he might have achieved election to the presidency of the Republic, had this catastrophe not occurred.

Dr. Grillo was born Nov. 16, 1901, in San José, Costa Rica. He was educated at Chenet's Institute, Loyola University and Tulane University, all of New Orleans, Lousiana. He pursued postgraduate studies at the Philadelphia College of Pharmacy and the Rheinische Friedrich Wilhelm's University at Bonn, Germany. He held many important posts in hospitals, universities and ministries and was the recipient of the Chilean Decoration al Mérito and the Cross of O'Higgins Order of Chile. He was a Fellow of the International College of Surgeons, the College of Physicians and Surgeons of Costa Rica and the Academy of Political Science of Columbia University, New York City. He was the author of several authoritative books, some of them on the subject of public health administration; he gathered information and data for these books while he was Chief of the Maternity Department of the Ministry of Public Health from 1937 to 1940. His papers on medical subjects, published in many journals, made him a well-known figure in national and international medical literature. In 1946 he was Ambassador Extraordinary at the inauguration of President Alemán of Mexico. He is survived by his widow and four children; two of his daughters, students at a Canadian college, perished with him in the airplane disaster.

CHRISTIAN FREDERIC LOUIS LEIPOLDT

M.D.

Dr. Leipoldt died Apr. 12, 1947, in Capetown, South Africa, aged 67. As Editor of the Medical Journal of South Africa he was a well-known figure in national and international medical literature. He was lecturer in children's diseases at the Capetown University and had been personal physician to Joseph Pulitzer, publisher of the New York World.

SIR ALMROTH EDWARD WRIGHT

M.D.

Sir Almroth Wright, originator of vaccination against typhoid, died Apr. 30, 1947, at his home in Farnham Common, Buckinghamshire, England, at the age of 85. He was one of the famous bacteriologists of England, and he developed the opsonic method, by which bacteria and other cells are made susceptible to the action of phagocytes.

As we go to press, the sad news reaches us that **Professor Doctor Angel H. Roffo**, the noted cancerologist of Buenos Aires, died at the age of 65.

NEW BOOKS

An Integrated Practice of Medicine [1] by **Harold Thomas Hyman** is an attempt to correlate the diagnostic and therapeutic problems of the individual patient with whom the general practitioner has to deal. The cardinal objectives of this massive four-volume work include (1) complete delineation of the broad and diverse fields of general practice; (2) arrangement of material in the chronologic sequence of everyday practice; and (3) integration of the various subjects so that each discussion focuses consideration on the human patient as a biologic unity. Such integration of the entire organism has been emphasized by psychosomatic medicine. It would appear that Dr. Hyman has been eminently successful in the fulfilment of his aims.

Volume I contains six sections concerned with the general reactions of bodily tissues, infections, allergy, neoplasms, metabolism and poisoning. A brief review is given in the first section of the basic principles of histology, cellular physiology and biochemistry, pathology and pathologic physiology. Perhaps this section is somewhat too short to be a refresher course on some of the more important aspects of the basic sciences as related to tissue physiology and pathology. The section on infections is introduced by a short review of bacteriology, serology, immunology and nursing care of the infectious patient, and a discussion of chemotherapy and antibiotics. Infectious diseases are arranged in the familiar textbook fashion, with possibly too much tendency to crowd all available information and data into tables which some readers might find somewhat confusing. The cross-references to other volumes of the work are also somewhat profuse, but are probably a necessity for a work of this magnitude. In general, the information on infectious diseases is adequate and current; quite a bit of space has been devoted to laboratory data. The color plates of exanthems, microscopic slides and primary lesions are excellent.

The tabulated treatment schedules for syphilis are excellently arranged and should prove most valuable. The pages devoted to allergy seem at first glance to be not sufficient, but this disadvantage is overcome by the discussions of allergic phenomena in those sections where the particular shock organ involved would naturally place them. The section on neoplasms is only a brief discussion of pathology and modes of treatment; further descriptions of the various tumors are found in the discussions of the disease processes in each body system in other sections of the text. The section on metabolism is divided into four chapters, an introduction to the study of metabolism and nutrition which includes a brief, concise description of metabolism of the major food components, minerals and vitamins; the American diet; practical dietotherapy; differential diagnosis and the management of the common disorders of metabolism. The information presented should be quite sufficient for the needs of the practitioner. The final section on the circulatory system begins with the basic physiology of the cardiovascular system and the functional and organic disturbances met in practice. Electrocardiography is represented by some 80 tracings and tables of normal and abnormal variations are given, which apparently are intended to help the practitioner to interpret his own tracings.

Volume II deals with sections on the blood, endocrine system, eye, nervous and digestive systems. The chapters on psychiatry and neurology have been written in a clear and concise manner and adequately meet the needs of the practitioner. The tables in the hematologic section will be of great aid in understanding the many variations. Excellent color plates are included in the sections on the endocrine, nervous and eye systems.

Volume III consists of sections dealing with the respiratory, urinary, reproductive, skeletal and locomotor systems as well as obstetrics and pediatrics. The same general procedure is followed throughout with the frequent use of tables and cross-references. The descriptions of the various disease entities are accurate and precise, and the space given is commensurate with the relative importance and frequency of the disease. The atypical pneumonias, recently of special interest, are particularly well discussed, and the diuretics are well covered and completely presented.

Volume IV contains sections on the tegumentary system, physical diagnosis, laboratory methods, therapeutics, pharmacotherapy, major and minor surgery, prognosis and an appendix which discusses the establishment of office practice, a glossary of hematology, occupational hazards and diagnostic features of diseases caused by them, selected references and rehabilitation and convalescent care. The section dealing with the integument is quite long, some 366 pages, and contains many tables of differential diagnosis and a large number of excellent color plates. The section dealing with laboratory methods includes technical considerations as well as normal and abnormal findings and the respective conditions in which such occur. Medical therapeutics deals with psychotherapy, physical therapy and drug therapy.

[1] An Integrated Practice of Medicine: A Complete General Practice of Medicine from Differential Diagnosis by Presenting Symptoms to Specific Management of the Patient. Harold Thomas Hyman, M.D. Vols. I–IV, and Index. 4,336 pp., 1,182 illustrations. W. B. Saunders Co., Philadelphia, Pa., 1946.

Sección en Español

Síntesis Ósea Externa

ALFREDO GONZALEZ GARCÍA, M.D.
HABANA, CUBA

LA fijación externa del esqueleto en las fracturas, se ha popularizado de tal manera, que es el procedimiento de elección en muchos casos.

Aunque son múltiples las técnicas descritas, las más frecuentemente usadas actualmente son las de Otto Stadder, veterinario de Filadelfia y la de H. H. Haynes, Cirujano Ortopédico del St. Mary's Hospital de West Virginia.

VENTAJAS DE AMBOS PROCEDIMIENTOS

Las inmovilizaciones de las grandes espigas o aparatos de yeso y el reposo prolongado en cama durante el tratamiento de los fracturados, han obligado a los especialistas a usar estos métodos, que aunque ya se conocían desde la antigüedad, sa han perfeccionado últimamente cada vez más.

Obtenemos con las férulas de Stadder y Haynes, la conservación de los principios fundamentales en los casos de fracturas, que son: (1) buena coaptación de los fragmentos; (2) inmovilización sostenida hasta la consolidación.

Estos principios se conseguían con las tracciones de clavos de Steinmann 1907), los alambres de Kirschner, los aparatos de yeso, y con ambos procedimientos combinados. Sin embargo, no obteníamos las ventajas de la síntesis ósca externa, que son:

1ro. Movimiento de las articulaciones vecinas en las fracturas diafisarias, lo que evita las rigideces articulares que tanto trabajo dan, a veces, posteriormente sobre todo en personas de edad avanzada.

2do. Evitación de las atrofias musculares debidas al ejercicio precoz.

3ro. Deambulación precoz.

4to. Los pacientes pueden ser trasladados de un lugar a otro con facilidad y pueden abandonar prontamente el hospital o clínica, lo cual resulta más económico.

Antes de citar nuestra experiencia con las férulas de Stadder y de Haynes, nos permitimos aconsejar algunos detalles de técnica fundamentales:

1°. Que los clavos o tornillos, después de atravesar la premera cortical se fijen en la cortical opuesta, única manera de sostener la coaptación de los fragmentos y realizar la deambulación precoz en los casos de pierna y el uso de los miembros superiores en los casos correspondientes.

2°. Es importante tener en cuenta que la herida, por donde se va a introducir el clavo o tornillo, sea lo suficientemente amplia para evitar la mortificación de la piel.

3°. La reducción debe ser lo más perfecta posible y hecha bajo control flueroscópico.

4°. La deambulación, aunque precoz, debe realizarse cuando las condiciones generales del paciente lo permitan.

5°. La férula no debe extraerse hasta la completa consolidación.

El aparato reductor de la férula de Haynes, después de haber practicado bien la técnica para su imposición, resulta ideal por la amplitud de sus movimientos y con él, bajo la pantalla fluoroscópica, se obtienen reducciones anatómicas, cuando se ha escogido el caso convenientemente.

Hasta el momento actual, sólamente lo hemos utilizado en los casos de fracturas diafisarias y cuidando que el área de los fragmentos sea suficientemente grande para la imposición de los tornillos.

En las diáfisis de las falanges y metacarpianos, ha sido utilizada la férula de clavícula o la de maxilar, usando un solo bloque, con la técnica descrita por nuestro asociado, el Dr. Francisco Tejera.

En muchos ocasiones, hemos obtenido re-

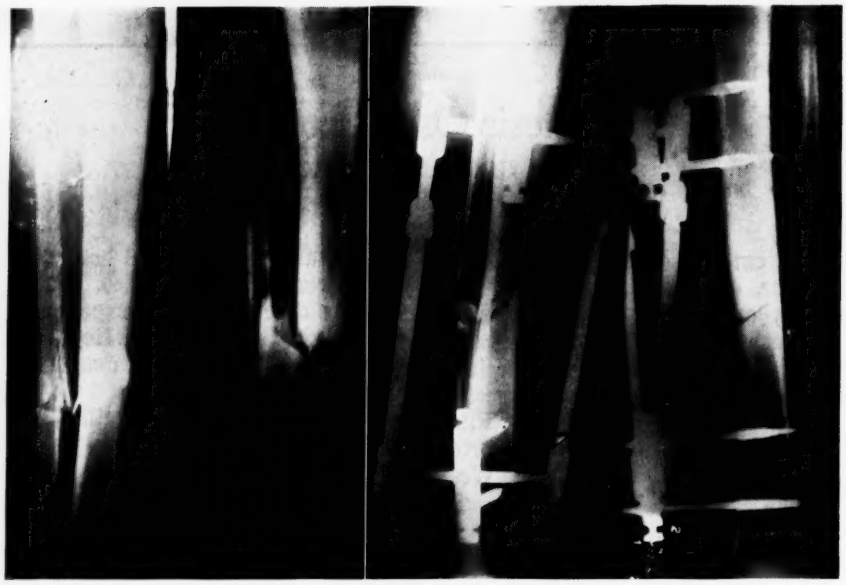


Fig. 1.—Case 1.

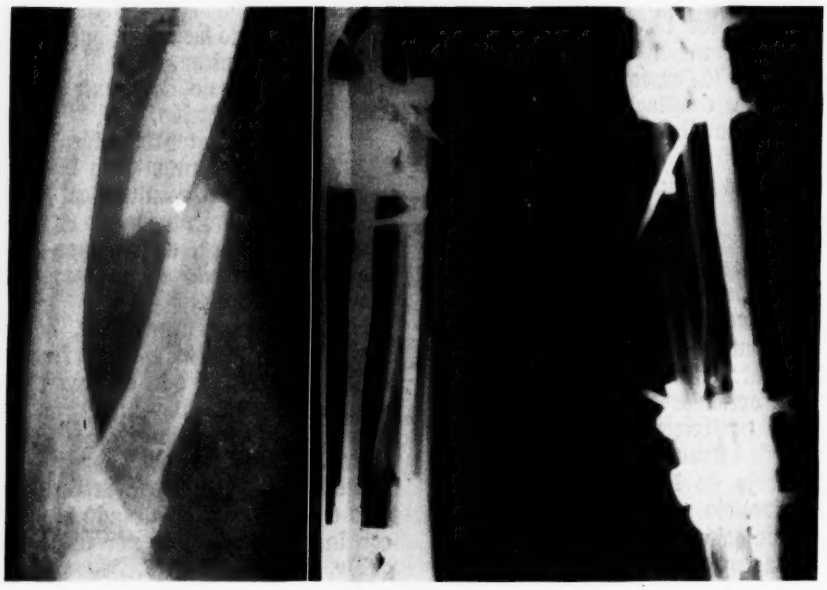


Fig. 2.—Case 2.

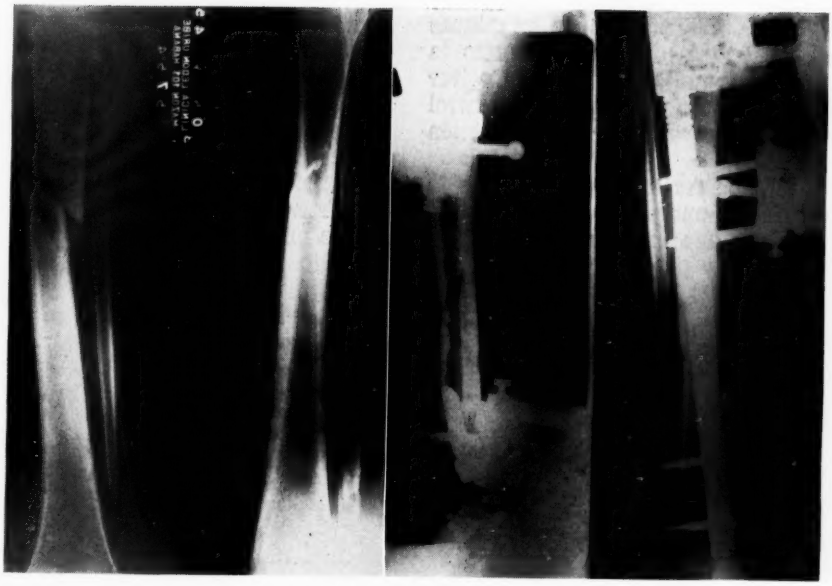


Fig. 3.—Case 3.

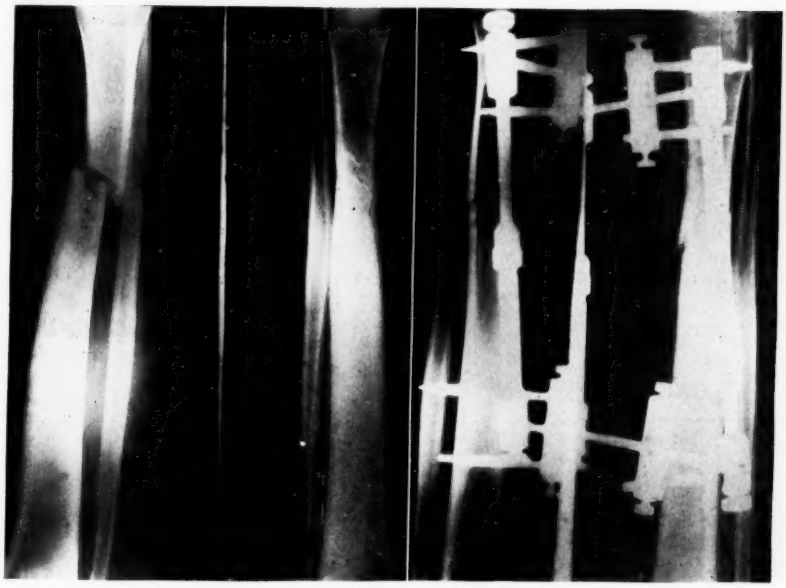


Fig. 4.—Case 4.

ducciones anatómicas, practicando las mismas algunos días después de haber impuesto la férula, pues basta quitar las barras y volver a utilizar el aparato reductor bajo control fluoroscópico, para mejorar la reducción inicial.

En un caso de fractura conminuta de la tibia, después de impuestos los tornillos y los bloques, hicimos una incisión en la cara interna de la tibia y practicamos la reducción cruenta, fijando las barras y suturando los tejidos blandos. A los 11 días quitamos los puntos y a los 14 el paciente deambulaba, haciéndolo a la perfección a los 25 días, sin que se notará la menor cojera.

Aunque con la férula de Stadder se pueden realizar movimientos de reducción inmediatos o posteriores, nos hemos inclinado a usar con más frecuencia el aparato reductor de Haynes por la amplitud de los movimientos durante la reducción, su menor peso y su gran resistencia.

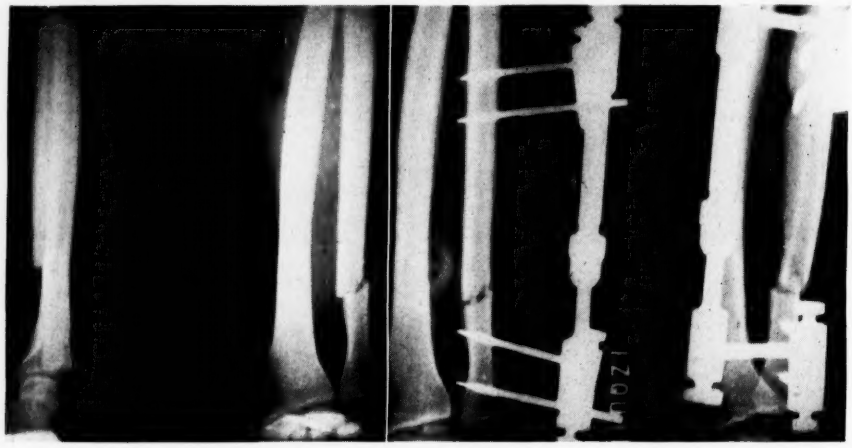


Fig. 5.—Case 5.

Fig. 6*A (left)*.—Case 6.

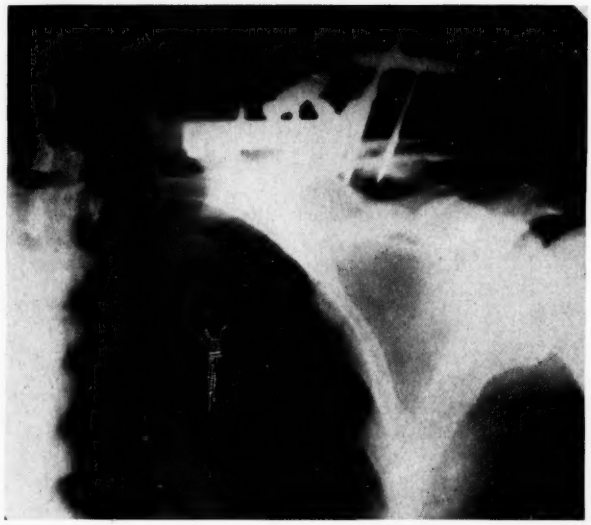


Fig. 6*B (left)*.—Same case as preceding.

Fig. 7*A (right)*.—Case 7.

No cabe duda, que siendo ambos procedimientos de iguales fundamentos, se obtiene con ambas técnicas parecidos resultados.

ESTADISTÍCA

36 casos tratados

		Resultado		
Férula	Número	Buenos	Medianos	En vías de curación con férulas
Stadder	5	4	1	..
Haynes	31	26	..	5

En las figuras que a continuación se detallan, se pueden observar algunas de las reducciones de nuestros casos con las férulas de Stadder y de Haynes:

CASOS

Caso No. 1.—N. de la O., 32 años, raza blanca, campesino.

Fractura esquirlosa del tercio medio de la tibia y peroné con desplazamiento fragmentario. Fué reducido con férula de Haynes, deambulando a los 14 días y habiéndole quitado la férula a los 60 días,

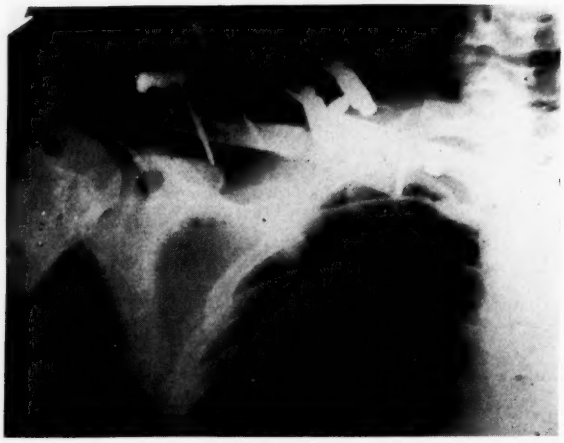


Fig. 7*B*.—Same case as preceding.

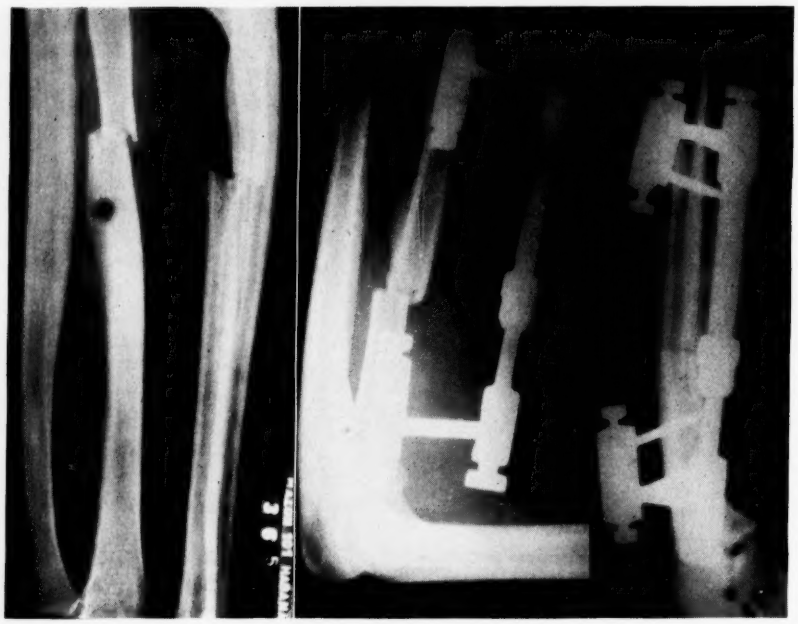


Fig. 8.—Case 8.

siendo el estado funcional del miembro perfecto. Resultado excelente.

Caso No. 2.—F. D., 40 años, raza blanca, jornalero.

Fractura del tercio superior del radio izquierdo, con desplazamiento. Reducción aceptable con férula de Stadder. Buen resultados con perfecto functionamiento a los 45 días.

Caso No. 3.—M. C., 67 años, raza blanca, campesino.

Fractura en la unión del tercio medio e inferior de la tibia derecha con desplazamiento y fractura del tercio superior del peroné. Reducción con férula de Haynes. Deambulación precoz a los 15 días y resultado excelente con perfecto funcionamiento a los 70 días.

Caso No. 4.—P. V., 54 años, raza blanca, su casa.

Fractura de la unión del tercio medio con el inferior de la tibia derecha con desplazamiento. Reducción con férula de Haynes. Deambulación a los 14 días; se trasladó a su domicilio. Resultado excelente con perfecto funcionamiento a los 80 días.

Caso No. 5.—M. G., 33 años, raza mestiza, campesino.

Fractura del tercio inferior del cúbito izquierdo con ligero desplazamiento fragmentario. Buena reducción con férula de Haynes. Uso del miembro desde los primeros días. Trasladado a su domicilio. Dado de alta a los 50 días con perfecto funcionamiento del antebrazo.

Caso No. 6.—O. L., 30 años, raza blanca, mayoral.

Fractura conminuta del tercio medio de la clavícula izquierda. Buena reducción con férula de Haynes. Dado de alta a los 35 días sin complicaciones.

Caso No. 7.—R. R., 25 años, raza blanca, campesino.

Fractura del tercio medio de la clavícula izquierda con desplazamiento. Reducción con férula de Haynes. Dado de alta a los 35 días.

Caso No. 8.—M. J., 43 años, raza blanca, jornalero.

Fractura del tercio superior del radio. Reducción aceptable con férula de Haynes. Dado de alta a los 45 días con buen resultado.

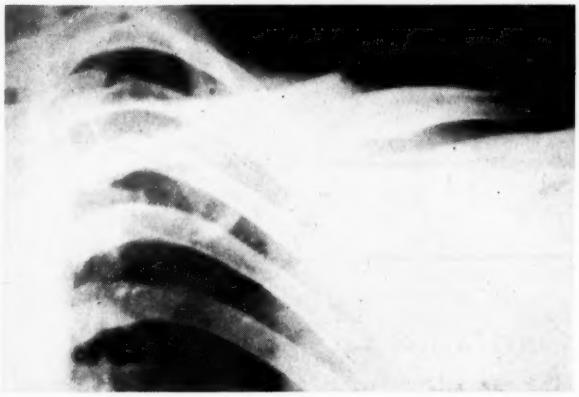


Fig. 9*A (left)*.—Case 9.

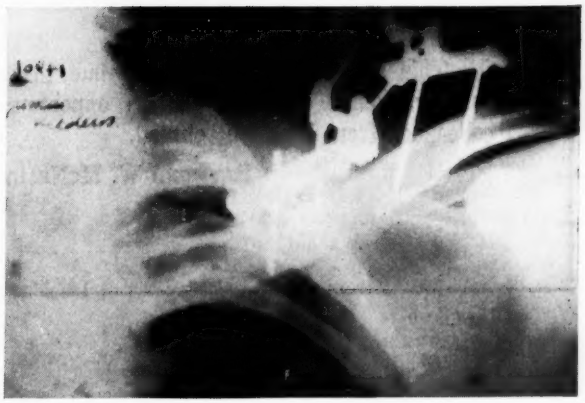


Fig. 9*B (right)*.—Same case as preceding

Caso No. 9.—B. M., 37 años, raza blanca, empleado.

Fractura del tercio medio de la clavícula derecha con desplazamiento fragmentario. Buena reducción con férula de Haynes. Dado de alta a los 40 días con buen resultado.

CONCLUSIONES

1. Que la síntesis ósea externa, a nuestro juicio, será el tratamiento ideal a seguir en la mayoría de los casos de fracturas cerradas.
2. Que también será utilizado y cada vez más, en las fracturas abiertas.
3. Que la imposición de los clavos o tornillos es inocua, aunque algunas veces, muy raras, se observe algo de secreción banal a nivel de la piel y alrededor del clavo o tornillo.
4. Que no hemos observado fenómenos de infección ni de osteoporosis en nuestra corta experiencia, siendo los resultados finales excelentes.

BIBLIOGRAFIA

1. Sharr, C. M.; Kreuz, F. P., and Jones, D. T., End Results of Treatment of Fresh Fractures by Use of the Stadder Apparatus, J. Bone & Joint Surg. **26**:471, 1944.
2. Haynes, H. H., Skeletal Fixation of Fractures, Am. J. Surg. **59**:25, 1943.
3. Tejera, Francisco, Utilización de la Férula de Haynes en Falanges y metacarpianos, Vida Nueva **56**:29, 1945.
4. Johnson, Robert W., and Lyfort, John, Use of the Haynes Skeletal Fixation Apparatus in Definitive Orthopaedic Surgery, J. Bone & Joint Surg. **26**:475, 1944.
5. Stadder, Otto, Preliminary Announcement of a New Method of Treating Fractures, North American Veterinarian **18**:37, 1937.

SUMMARY

In the opinion of the author skeletal traction and fixation by the use of such apparatus as Stadler's and Hynes' offers the ideal treatment in the majority of simple fractures; he feels that these procedures will be used in time more frequently in the treatment of compound fractures.

In his experience pins and screws are innocuous and do not produce osteoporosis or infection when used in selected cases.

AN INVITATION

We extend an invitation to the medical profession to attend the Twelfth National Assembly of the United States Chapter of the International College of Surgeons to be held at the Palmer House from September 28 to October 4, inclusive. There will be an impressive scientific program, as well as operative clinics and round table discussions.

This should be an excellent time to review the scientific progress of surgery. There will also be an opportunity to meet many distinguished colleagues from here and abroad.

RAYMOND W. MCNEALY, M.D., F.A.C.S., F.I.C.S.,
General Chairman

Laringectomia. La Laringotomía Exploradora y la Biopsia por Congelación

ROBERTO C. FERRARI, M.D., F.I.C.S.*
BUENOS AIRES, ARGENTINA

EN la práctica del tratamiento quirúrgico del cáncer laríngeo nos hemos visto en la necesidad, muchas veces, de practicar una *laringotomía exploradora,* para resolver el tratamiento a seguir. Creemos conveniente llamar *laringotomía* a la sección mediana de la laringe, de preferencia a *laringofisura o tirotomía,* usados corrientemente por los laringologistas; aquel es un vocablo que por su formación y su significado, está acuerdo con la nomenclatura quirúrgica corriente; estos otros, en cambio, no llenan esas condiciones.

La *laringotomía exploradora* está indicada en dos circunstancias: (1) Casos de tumores endolaríngeos comprobados por el estudio histológico, pero en los que, a través de los datos del examen endoscópico y radiológico, no puede establecerse si es posible una operación conservadora o si es necesario hacer una laringectomía; y (2) Casos en los que la historia clínica del enfermo corresponde a un cáncer pero que las biopsias repetidas no lo han puesto en evidencia.

1° Entre los tumores de escaso desarrollo, cuyo estudio no deja duda alguna de que pueden ser extirpados conservando la laringe y aquellos otros en que es evidente la necesidad de una laringestomía, hay algunos que por su extensión intermedia no pueden ser clasificados entre unos y otros. La experiencia ha demostrado que cuando la posibilidad de una operación conservadora no es evidente, la laringectomía es necesaria.

En muchos casos, la observación endoscópica mas minuciosa y el estudio radiológico no permiten establecer con precisión la extensión del tumor. Es en esas circunstancias que está indicada laringotomía exploradora. En este momento sólo queremos precisar el concepto de que, con frecuencia, la laringotomía exploradora será el primer tiempo de una operación que terminará por una extirpación parcial o por una laringectomía.

2° Laringotomía exploradora y biopsia por congelación. En nuestra práctica en el tratamiento del cáncer laríngeo hemos visto muchos pacientes en quienes la historia clínica y el aspecto laringoscópico corresponden a un cáncer laríngeo, no obstante lo cual la biopsia, hecha repetidas veces, resulta negativa, es decir, no muestra al tumor que se sospechaba.

El resultado negativo de una biopsia es un hecho banal en el cáncer laríngeo; las características del tumor y la dificultad con que se choca en algunos enfermos para tomar con precisión una muestra de tejidos, los explican. Pero es habitual que una segunda toma muestre el tejido neoplasico y confirme el diagnóstico.

No obstante, hay casos en que repetidas biopsias dan resultado negativo; los tejidos que se someten al examen del patólogo muestran mucosa normal o edematosa; otras veces se trata de mucosa de aspecto hiperqueratósico, de pólipos, de tejidos con infiltración plasmocitaria, etc.; en ningun caso el estudio histológico permite establecer el diagnóstico real, no obstante que desde el punto de vista clínico se trata de un tumor.

Al comienzo de nuestra práctica hemos visto como estos enfermos eran sometidos a tratamiento antisifilítico, catalogados sin fundamento como luéticos; otras veces se los consideraba tuberculosos. Siempre se encontraban argumentos para invocar una etiología sifilítica o tuberculosa, que no tienen mas fundamento que la neoplásica, pero que satisfacen al espíritu porque justifican una terapéutica espectante.

El resultado de esta conducta es desastroso. En todos los casos hemos visto que el enfermo

*Professor Adjunto de Clínica Quirúrgico de la Facultad de Ciencias Medicas de Buenos Aires; Cirujano Jefe del Cantro Anticanceroso del Instituto de Medicina Experimental.

se agrava progresivamente hasta llegar a un estado en que todo tratamiento es imposible; en ese momento el cáncer se hace evidente si se toma una nueva biopsia, pero ya es tarde para curarlo.

Creemos necesario agregar que en todos los casos en que se trataba de sífilis o tuberculosis, la etiología fué puesta en evidencia por el estudio histológico en la primera o en la segunda biopsia; la negatividad repetida de la biopsia es un elemento en favor de la naturaleza neoplásica de la lesión.

No obstante lo que afirmamos más arriba, consideramos que el tratamiento quirúrgico del cáncer laringeo no debe emprenderse sino ante la evidencia histológica del tumor; la responsabilidad que contrae el cirujano que practica una laringectomía es demasiado grande para que no tenga por fundamento un diagnóstico histológico firme. Esto nos ha llevado a practicar *la laringotomía exploradora y la biopsia por congelación* en los casos en que anteriores biopsias han sido repetidamente negativas y en los que, por todo los demás, el tratamiento quirúrgico del cáncer laringeo está indicado.

Hemos practicado la laringotomía exploradora en 1 casos (no consideramos aqui aquellos en que el examen del enfermo no dejaba dudas acerca de la reducida extensión del tumor y permitía asegurar que la operación conservadora era posible). En 7 casos, el tumor estaba clasificado histológicamente, pero la laringotomía fué considerada necesaria para precisar su extensión y establecer qué operación deberia efectuarse; en todos ellos fué necesaria practicar una laringectomía. En 10 casos no teníamos diagnóstico histológico. En 9, la historia clínica del enfermo era la de un cáncer laríngeo, pero biopsias repetidas no mostraron la existencia del tumor; en todos ellos la biopsia por congelación mostró que se trataba de un cáncer y la laringe fué extirpada. El examen de las piezas demuestra las causas de este fracaso repetido en el intento de tomar una muestra de tumor. Se trata, en todos los casos, de tumores infiltrantes, que se desarrollan en la submucosa y levantan la mucosa laríngea; esta se conserva intacta durante mucho tiempo, sin ulcerarse. En la observación endoscópica, se ve un tumor bastante desarrollado pero cubierto por mucosa sana; la porción ulcerada es difícilmente visible y asimismo es dificil tomar en ella un trozo de tejido. Este aspecto macroscópico fué encontrado, con variedad de detalles, en todos los casos en que necesitamos recurrir a la laringotomía y biopsia por congelación.

En el caso restante se trataba de un enfermo con estenosis laríngea cuya naturaleza no pudo ser precisada; se trataba de un proceso de larga evolución en que se sospechó la existencia de una neoplasia en un terreno sifilítico; el enfermo había sido sometido a muchas observaciones por varios laringologistas; fracasaron diversos intentos de hacer una biopsia o sólo permitieron tomar al azar una muestra de tejidos sin caracteres definidos. En dos ocasiones, se había hecho una traqueotomía, que luego se dejó cerrar; nos envio el enfermo el Prof. Becco. La laringotomía exploradora nos mostró que no había tumor y que sólo se trataba de una estenosis laríngea de causa no precisada.

La experiencia adquirida con este modo de proceder es, como se ve, limitada pero demostrativa. Es natural que su indicación no puede ser muy frecuente, dado que, a medida que se perfeccionan los recursos de exploración clínica, el diagnóstico es más seguro y preciso. No obstante, es necesario aprovechar las ventajas de este recurso, que permite resolver con eficacia muchas situaciones. La laringotomía exploradora es un último medio de diagnóstico, de eficacia probada.

SUMMARY

In the surgical treatment of cancer of the larynx, it is necessary to perform at times an exploratory laryngotomy which is best accomplished through a median section of the larynx.

Exploratory laryngotomy is indicated in all cases where the surgeon has been unable to determine in advance, in spite of all diagnostic means at his command, the most suitable surgical procedure for the resection of the tumor. It is also indicated in cases with a typical clinical history of cancer, but in which repeated biopsies have failed to confirm it. This is particularly of importance in the infiltrating cancers of the submucosa which have not yet invaded the mucosa.

Nuestras Observaciones Sobre 43 Casos de Embarazos Ectópicos*

PEDRO A. MENDOZA, M.D.†
CHINCHA, PERU

EN el tiempo que llevamos al frente de los Servicios Quirúrgicos del Hospital "San José" de Chincha, hemos tenido oportunidad de asistir y tratar 43 casos de embarazos ectópicos, que nos han proporcionado alguna experiencia sobre ésta manifestación aguda y grave de la ginecología y en la que, felizmente, la cirugía oportuna sale airosa, al punto de que nosotros no hemos tenido que lamentar ningun caso fatal.

El estudio de las gestaciones ectópicas ha sido motivo de preocupación, muy justificada por cierto, de los investigadores como lo demuestra la cantidad de trabajos publicados al respecto; este interés ha contribuído al mejor conocimiento de la afección por los médicos en general, que deben estar atentos a su existencia, con fines diagnósticos y enviarlos oportunamente al ginecólogo.

Esta enfermedad se produce con una frecuencia tal, que no permite clasificarla dentro de las afecciones raras sino que, por el contrario, ocupa un lugar preponderante dentro de la ginecología; nuestros casos alcanzan un 5 por ciento, en relación a las 850 intervenciones de cirugía general y ginecológicas que hemos practicado.

En nuestros casos, 40 correspondieron a embarazos ectópicos simples y 3 a embarazos ectópicos múltiples. Segun su localización anatómica y localización unilateral, hemos observado lo siguiente:

CASOS DE EMBARAZOS ECTÓPICOS SIMPLES

No. de Casos	*Localización anatómica*	*Localización unilateral*
40	Ampulares 28 o sea 70%	Derechas 16 o sea 40%
	Istmicas 11 o sea 27,50%	Izquierdas 24 o sea 60%
	Abdominal 1 o sea 2,50%	

De éstos, encontramos 14 no complicados (32,55%) y 26 complicados (60,46%)

CASOS NO COMPLICADOS

No. de Casos	*Localización anatómica*	*Localización unilateral*
14	Ampular 12	Derechas 3
	Istmica 2	Izquierdas 11

con estas características: amenorrea de un mes en 10 casos, solamente retraso menstrual de cuatro a seis días en 4 casos, fueron constantes las pérdidas sanguineas, el "signo del paño" del Delbet entre diez, veinte y hasta treinta días.

CASOS COMPLICADOS

(Embarazos ectópicos rotos)

No. de Casos	*Localización anatómica*	*Localización unilateral*
26	Ampular 16	Derechas 13
	Istmica 9	Izquierdas 12
	Abdominal 1	Abdominal 1

con estas características: amenorrea, retraso menstrual, pérdidas sanguineas como en los casos no complicados. El anidamiento correspondió a un 61,53 por ciento en la porción ampular y a un 34,61 por ciento en la porción ístmica.

CASOS DE EMBARAZOS ECTÓPICOS MULTIPLES

Ademas de los casos precitados también hemos tenido oportunidad de encontrar 3 casos de embarazo ectópico múltiple, o sea una proporción de 6,98 por ciento, con relación al total de ectópicos tratados, y cuya clasificación fué:

Tubarios bilaterales : Ampular e ístmico *2 casos*
Tubarios bilaterales : Ampular e intersticial *1 caso*

Conceptuamos las cifras anteriores algo elevadas, comparadas con las halladas en los hospitales de la capital y las referidas por especialistas de otros paises. No está demás

* Contribución al Congreso Internacional de Cirujanos, a reunirse en Lima en marzo de 1946.
† Jefe de los Servicios Quirúrgicos del Hospital San José de Chincha.

que hagamos advertencia sobre la costumbre, de la mayor parte de nuestra población femenina del campo, de cabalgar en asnos, durante sus gestaciones o sus estados puerperales postpartum o postabortum por razones de trabajo y que puede contribuir en elevar dichas cifras.

Consiguientemente las salpingectomías practicadas fueron:

Salpingectómías derechas		15
Salpingectómías izquierdas		18
Salpingectomías dobles	Por salpingitis inflamatoria del lado opuesto.	4
	Por torción de la trompa del lado opuesto	1
	Por embarazo ectópico múltiple	3
	Por ectópico abdominal	1

En un caso por aborto tubario izquierdo y estado precario de la paciente, por la intensidad de la hemorragia y shok, no se practicó ninguna anexectomía, limitándonos solo a la *toilette* y compresión por un Miculicks con positivo beneficio de la paciente, que recuperó la salud satisfactoriamente.

Nuestra conducta terapéutica tampoco ha descuidado las proyecciones médico sociales que significan toda extirpación, tanto de las trompas, como de los ovarios, pues cada vez que ha sido posible conservar dichos anexos para su futuro funcionamiento y fisiologismo normal, se ha dejado, excerizando solamente el anexo irreparable.

Con respecto a la edad, la mayor frecuencia ha correspondido entre 24 y 32 años, o sea el período de vida genital mas intensa.

SINTOMATOLOGIA.—El síntoma de gran valor encontrado en todos nuestros casos de embarazo ectópico roto es el "Dolor cólico", con su cuadro de abdomen agudo, que evoluciona dentro de la sintro matología dolorosa y anemia consiguiente hasta el momento de la intervención. Cuando se produce la *hemorragia cataclísmica, hay sintomas que solo* una observación apropiada puede determinar la operación salvadora; en dichos casos prima un estado angustioso, disnea, taquicardia, hipotensión arterial, cólico y shok iniciales. A la palpación superficial y profunda es posible no encontrar DEFENSA PERITONEAL, ni tampoco se puede percibir tumoración alguna; es decir, el abdomen está mudo; el tacto, en verdad, recoge datos, pero en el período inicial de una hemorragia, antes de que los coágulos organzados se puedan formar, no es posible precisar ni siguiera una tensión del Douglas, a menos que se tenga un *treining* ginecológico a diario, como lo afirman los ginecólogos.

Sin embargo casi siempre se constata el Dolor exquisito del Douglas (signo de Proust positivo) que unido a la ausencia de contracción abdominal indica un *derrame introperitoneal,* lugado a la ruptura o al aborto de un embarazo tubárico. Otro signo observado en uno de nuestros casos, es la aparición de dolor y su persistencia en el *hipocondrio derecho,* correspondiendo al noveno o decimo nervios intercostales, y que algunos autores lo relacionan a hemorragias graves, explicado su mecanismo por la LEY DE REFLEJOS de Head y Mackensie, o sea que, partiendo la irritación del peritoneo, cierra su circuito sobre el frénico o los nervios intercostales, similar al síndrome epigástrico de Rove, que en las primeras horas puede enganar el inicio de un ataque apendicular.

El Hemograma de Shilling acusa siempre, en los casos de ruptura del huevo por gestación ectópica, anemia, leucocitosis alta y fuerte degeneración a la izquierda.

En suma, el signo de Proust, a veces el reflejo de Head y Mackenzie y el Hemograma, asociado al cuadro general angustioso, sirven de base para sentar el diagnóstico y decidir la operación, que casi siempre es salvadora.

La ETIOPATOGENIA de las gestaciones ectópicas constituye un problema de la Ginecología no resuelto aún; existen, sin embargo, algunos conceptos teóricos, basados en hechos de observación, que tratan de explicar las causas de anidación patológica del huevo fecundado fuera del útero.

Nuestras observaciones al respecto, sin pretender sentar juicios definitivos, han permitido encontrar en la mayor parte de nuestros casos, micro-organismos vulvo-vaginales con lesiones cervicales y, en muchos de los cuales, el Gonococo ha estado presente. Posiblemente esta *causa infecciosa* provoca afecciones inflamatorias de las trompas, las cuales sufren alteraciones en su mucosa pérdida de los cilios vibrátiles de su epitelio, acidamientos, este-

nosis, catarros tubarios, etc. y crea así condiciones especiales que originan el anidamiento patológico del huevo fecundado.

Otro hecho de nuestra observación es la MULTIPARIDAD y la frecuencia de los ABORTOS ANTERIORES. La mayor parte de los casos tratados por nosotros han sido multíparas; los embarazos anteriores y sobre todo en las mujeres de nuestra campiña, que renuevan su trabajo ordinario casi a la semana de su alumbramiento, es lógico suponer que dicha circunstancia cree condiciones propicias para el anidamiento patológico del huevo, pues la involución incompleta, unida a procesos inflamatorios consecutivos que acompañan al parto, deja secuelas y alteraciones orgánicas en los anexos, capaces de favorecer los ectópicos. Con respecto a los abortos anteriores, que existen como antecedente firme en la mayor parte de nuestros casos, puede considerarse como causa evidente de la génesis de los ectópicos; dichos abortos como es natural y en nuestra gente de trabajo, provoca lesiones a nivel de los órganos genitales.

Otro hecho que debe recordarse, para explicar la circunstancia de un embarazo ectópico, es la propiedad que posee el óvulo de migrar a mayor o menor distancia (teoría de la emigración de los óvulos), pues segun los autores, se conocen casos de gestación ectópica de una trompa, con cuerpo amarillo del embarazo en el ovario del lado opuesto. Nosotros hemos observado un caso evidente, el que señalamos como localización *abdominal,* que se desarrolló conforme a ésta teoría, pues el bloque hemático estaba localizado hacia la derecha, englobando el anexo de este lado, que fué extirpado en conjunto. Examinada la trompa izquierda, presentaba una turgescencia en toda su extensión y estado degenerativo de la porción ampular, por la que también fué extirpada. Despues de la intervención, al practicar el examen de la trompa derecha, que extraída globalmente con el hematocele, y aislada, pudo constatarse su forma, color, tamaño y demas caracteres de aspecto completamente normal. Ha habido, pues, una migración del óvulo del ovario izquierdo fecundado y captado por el pabellón del lado derecho, migración cruzada descrita por Spameni, como mecanismo frecuente en los casos de gestaciones ectópicas.

Si bien estas teorías ovulares o tubarias explica la etiopatogenia de nuestros embarazos ectópicos, de acuerdo con los observadores clásicos, no dejamos de reconocer que la teoría de la ENDOMETRIOSIS satisface mejor para explicar la causa del anidamiento de un huevo fecundado; Sampson, Calantroni y entre nosotros Aldo Raffo, han comprobado la existencia de tejido endometrial (trozos de endometrio desprendidos) con formaciones glandulares en toda gestación ectópica, y han sentado como conclusión, que para todo anidamiento o placentación del huevo se requiere la existencia de dicho tejido endometrial en la zona, condición sin la cual no puede desarrollarse un embarazo; y dicen, que en la formación del embarazo participan: óvulo, espermatozoide y endometrio. Otro autor ha dicho que el embarazo es cuestión de semilla y terreno; no tiene importancia los factores fisicos, mecánicos o inflamatorios, si no hay terreno especial y único para la anidación y futuro desenvolvimiento del huevo fecundado. Si lo encuentra en la trompa, en la superficie del ovario o en el peritoneo, pues allí se anida.

Para terminar este comentario, debemos referirnos al *diagnóstico diferencial,* que es preciso establecer cuando no hallemos al frente de casos como los que acabamos de describir; otros procesos a diferenciar son: *quiste de ovario a pedículo torcido* que da un cuadro de abdomen agudo ya sea ocasionando una oclusión intestinal o por dificultad circulatoria del mismo quiste; la *torción de la trompa uterina* sobre su meso, que puede provocar un infarcto hemorrágico, con fenómenos dolorosos abdominales, y que puede conducir al diagnostico erróneo de apendicitis aguda, anexitis, o de embarazo ectópico. La ruptura de un *folículo ovárico* produce hemorragia a veces considerable, con el tipo de inundación peritoneal que, como lo afirman muchos observadores, tiene como dato importante que el accidente se produce casi siempre en el período pre-menstrual.

La conducta terapéutica oportuna, las Salpingectomías, con incisión transversal de Phanestyl y anestesia general al Pentothal

(Continuado en página 480)

El Éxito Quirúrgico en el Cáncer, Estriba en el Conocimiento Morfólogico del Tejido Canceroso

J. ALEJANDRO L. JARRÍN VERA, M.D.*
LIMA, PERU

EL conocimiento de la morfología del tejido canceroso reviste una importancia fundamental en el campo de la cirugía del cáncer, toda vez que esclarecidos oportunamente los signos cancerosos se llega a precisar un diagnóstico precoz, dando así el "primer grito de alarma". Como se sabe, el problema de la curación quirúrgica del cáncer ya está resuelto, pero, únicamente, a condición de atacarlo desde su iniciación, antes que deje de ser una afección localizada. Es pues, la manera de poderlo curar casi siempre y, si se trata del cáncer del útero, diremos con Faure, "siempre".

Ningún método nuevo, ni las radiaciones profundas, ni el radium, han dado aún la solución definida del problema; en cambio, la cirugía del cáncer, oportunamente practicada, da los resultados más brillantes y, con ellos, el verdadero consuelo de la humanidad doliente, frente a tan tremendo flagelo.

Conocemos la trascendencia del problema del cáncer, pero no su origen enigmático o mecanismo íntimo que se resiste a ser delucidado, pese a los esfuerzos de la ciencia; sin embargo, de que el cáncer se puede producir en el laboratorio, y de que se sabe que existen productos cancerígenos, cuyas fórmulas químicas son muy semejantes a las de ciertos elementos elaborados en el organismo. En cuanto a la herencia, se admite que hay una disposición interior, mas no la herencia en su estricto significado. Sabemos además que el "terreno" está completamente ligado al factor alimentación. Todo ésto, perfectamente eslabonado, explica el desequilibrio neuro-endócrino que se opera en todo proceso canceroso, y del cual he tratado en otras oportunidades

Ahora nos toca describir el proceso canceroso en si: la perturbación de la proliferación nos revela ya cómo la patología del cáncer es sustancialmente un problema biológico, pues la célula elemental, considerada en su "anatomía" y en su "fisiología", depende de otra de la misma estructura molecular, cómo nos enseña la Biología. Es por ésto que se hará un mejor estudio si se ausculta el problema del cáncer en las fuentes mismas de la función vital, donde las secreciones de las glándulas endócrinas juegan un papel fundamental, toda vez que representan los más potentes agentes catalizadores empleados por la misma vida para acondicionar a sus fines las reacciones químicas que ella pone en juego. Pues bien, aunque parezca contradictorio a simple vista, la célula cancerosa, hasta cierto punto, no es anormal, pero, sí anárquica e invasora.

Todo tejido vivo está más o menos dispuesto a cancerizarse. Este fenómeno biológico está de acuerdo con la definición que, sobre cáncer, dice: "es un desequilibrio de la proliferación celular". Tal desequilibrio puede no modificar la morfología comparada de las células patológicas con las células sanas. La canceroso continúa casi idéntica a las del tejido que le ha dado origen, por supuesto, manteniéndose dentro de su nuevo estado. Aunque en otros casos puede tomar forma diferente a la de la célula madre. Con todo, aún así, como dice Roussy, no se ha podido poner en evidencia ningún carácter estructural realmente distintivo de las células cancerosas En tal virtud, la célula cancerosa valorizada en sí misma no es más anormal que cualquiera otra. La anomalía surge únicamente de la desarmonía funcional que la célula cancerosa introduce en los órganos sobre los que vegeta,

* Trabajo presentado a la Primera Conferencia Peruana de Cirugía.

a expensas de los cuales prolifera. Se trata, para desirlo de una vez, de una célula enferma que vive por ella misma, al margen del conjunto del organismo.

La célula cancerosa ostenta un carácter de orden general: posée los atributos de una célula "joven" en vías de proliferación. Habitualmente presenta un núcleo de gran dimensión (algunas veces el triple de uno normal) y muy rico en cromatina. El citoplasma es semejante químicamente al de las células jóvenes, es decir, al de las células embrionarias, que en el organismo no han alcanzado todavía especialización en el curso del desarrollo general, o que, "diferenciadas", han olvidado su especialización, lo que significa un estado de degeneración. Este estado es el que corresponde a las células de tejidos cultivados "in vitro" por el procedimiento de Carrel. El tejido en estas condiciones regresa al estado embrionario y prolifera sin diferenciarse nuevamente. Algo más, el grado de diferenciación varía según la naturaleza del cáncer. En el cuerpo de la célula cancerosa suele observarse la existencia de los mismos pequeños órganos que posée la célula normal.

De consiguiente la multiplicación de las células cancerosas no difiere a de las normales, pues ella se produce ya directamente, ya indirectamente.

Con estos conocimientos haremos un ligero esbozo del curso de la invasión del cáncer, sin pretender, desde luego, describir minuciosamente la evolución tan compleja de esta neoformación, la cual se manifiesta, generalmente, en un solo punto, semejante a un germen que se le puede localizar: se trata de la primera célula enferma. Esta célula cancerosa va a proliferar, como hemos expresado, de manera anárquica, pues el desarrollo y crecimiento de esta neoformación es autónomo en profundidad. Ella, que constituye el nódulo primitivo, emite raíces a su alrededor. Estas raíces forman acodos como llaman los pardineros, es decir, forman nódulos secundarios en diferentes puntos de la región invadida, que dan origen a nuevas ramificaciones autónomas, las que se sitúan algo distantes de los otros centros de proliferación. De esta manera sigue el cáncer su marcha invasora, en tanto que la región invadida se encuentra entumecida. El mal conquista su sitio de dominio disputándolo al tejido normal, y vive a expensas de éste como un parásito. Y cuando las cosas están en grande, ya no puede pasar desapercibido, en virtud de la guerra provocado.

Ahora bien, el crecimiento del tumor está dirigido tanto por la energía que implica la proliferación de los invasores, como por el poder de reacción de los tejidos ofendidos.

A fin de darse cuenta de la marcha de esta lucha hagamos una somera incursión sobre el terreno afectado. Todo cuerpo con vida, todo órgano, está formado por dos clases de tejidos: el tejido vivo propiamente dicho, esencialmente activo, y el tejido conjuntivo, casi inerte, que forma armazón al anterior. Desde luego, esta clasificación, de orden biológico, como las que se relacionan con todo lo que es vida, comprende además otros grados intermediarios. Los tejidos netamente epiteliales y los puramente conjuntivos no son otra cosa que "límites".

Existen, pues, dos clases de cánceres: los específicamente epiteliales y los específicamente conjuntivos. Los primeros se denominan epiteliomas y los segundos, sarcomas.

En la primera etapa del cáncer, o fase local, los elementos neoplásicos se generan por expansión concéntrica alrededor del nódulo canceroso lo que de la impresión, a simple vista, de que no les importase toda invasión general. La célula maligna también emigra en el organismo siguiendo las vías más diversas: la circulación sanguínea, las vías linfáticas, las cavidades serosas.

En resumen, la fase local del proceso consiste en la anarquía de proliferación contígua, y cuando el proceso ha adquirido la fase general, o a distancia, se trata de una anarquía por migración de células que se fijan en otro órgano.

Nos toca ahora ocuparnos de la reacción defensiva de los tejidos agredidos. El tejido normal invadido en forma masiva e insidiosa, no puede reaccionar favorablemente; es decir, no sabe defender se, ni aún en el caso del cáncer expontáneamente curado. Lo que se observa es una reacción de alarma que clínicamente se caracteriza por una inflamación local. Su importancia estriba sobre todo en

la posibilidad de hacer un diagnóstico más o menos precoz, toda vez que éste, por lo regular, facilita la curación.

Tan luego como se ha iniciado el proceso canceroso, éste se desarrolla en virtud del retroceso por compresión mecánica de los tejidos normales, y en virtud de la destrucción de estos tejidos, motivada por la acción físico-química corrosiva de los líquidos cancerosos que señalan nuevas rutas para la extensión del mismo tumor, en tanto que los vasos sanguíneos perforados por la misma acción, son, diríamos, cicatrizados por dicho tejido canceroso.

Ya con estos ligeros conocimientos podemos estudiar las dos especies de cáncer: el epitelial (epitelioma) y el conjuntivo o, más propiamente, conjuntivo-vascular (sarcoma).

Dentro de estas dos especies nos ocuparemos tan sólo de algunas de sus variedades: las correspondientes del tipo malpigiano (descritas por Darier, que admite la siguiente clasificación hecha por Klemperer: epiteliomas espinocelulares y epiteliomas basocelulares. Ambas formaciones se originan en la parte profunda del revestimiento cutáneo, en las paredes de las glándulas sebáceas y en la vaina de los pelos); y de algunos sarcomas.

Los de la primera variedad (epidermoides), muy malignos, a los que corresponde el antiguo "cancroide", ofrecen una evolución generalmente más veloz (2 o 3 años) y se desarrollan, también con rapidez, en profundidad. En ellos sus células sufren iguales transformaciones que las de la epidermis normal. Se trata exactamente de globos epidérmicos, formados por una parte de piel, que lejos de a vivir en la profundidad. Como no puede vegetar en la superficie libre se ve precisada extenderse adquiere la forma de globo (cánceres perlados), cuyo centro está ocupado por las células ya evolucionadas, que al no eliminarse forman una especie de perla (las evolucionadas son: córneas, queratinizadas); mientras que las células que están en actual evolución constituyen la parte exterior de él.

Con frecuencia hacen metástasis en los ganglios linfáticos y hasta en órganos lejanos, y son muy radiorresistentes. Su aparate filamentoso (prolongaciones protoplasmáticas de unión) algunas veces se desarrolla de manera extraordinaria, y, a pesar de ello, su poder de radiorresistencia es más o menos igual al de aquellas neoplasias cuyo aparato filamentoso está menos desarrollado. Se introducen profundamente en los tejidos subyacentes. Masas de esta clase de células llegan al tejido conjuntivo de la dermis, donde se implantan y, a la vez, puden exteriorizarse en forma de tumor. En la cara, tienen preferencia por el lóbulo de la nariz, el pabellón de la oreja, la frente, las regiones malar y zigomática, y las superciliares.

Como se ha visto, estos epiteliomas de origen ectodérmico, al desarrollarse, las vegetaciones y las trabéculas que forman no parecen echarse al exterior como si tuviesen que ser despedidas mediante una especie de exfoliación ininterrumpida, sino que penetran en profundidad, lo mismo que las invaginaciones epiteliales que deben constituir las glándulas y los aparatos pilosebáceos; lo que nos da la idea de que se trata de una especie de "remedo" de los primeros fenómenos del desarrollo del tejido normal, apartados de su finalidad fisiológica, o mejor dicho, rebeldes a la armonía anátomo-fisiológica frente a determinados factores, cuyo estudio será materia de otro trabajo.

Antiguamente se tuvo un concepto errado de lo que en sí representa esta variedad. Se le tenía como una mera rareza histológica y, más a menudo, como un detalle sin importancia; cuando en realidad es un signo inequívoco de la formación de epiteliomas epidérmicos, o epidermoides, como los llama Regaud, y cuyas características histológicas nos demuestran el porqué de las diferencias clínicas que dividen los "cancroides" pertenecientes a los espinocelulares, de los epiteliomas "ulcus rodens" pertenecientes al mayor número de los basocelulares. Comprobadas estas diferencias nos permitirán aplicar la terapéutica respectiva.

La segunda variedad o sea los epiteliomas basocelulares, comprenden el antiguo tipo clínico *ulcus rodens* y el epitelioma plano cicatricial, según el Dr. Lacassagne. Están constituídos por células parecidas entre sí; no sufren la metamorfosis queratógena que distingue a los epitelios pavimentosos estratificados y se originan en la capa basal de la piel.

La mayoría en los folículos pilosebáceos. Penetran en la dermis y forman conglomerados o masas celulares. Su evolución es sumamente lenta, y se extienden más en superficie que en profundidad. Rara vez afectan los ganglios linfáticos. Son radiosensibles (lo que ofrece ventajas para la curación), entento son de menor tamaño. Si no se les somete a tratamiento pueden con el tiempo pasar los límites de la dermis, destruir las partes blandas subyacentes, los huesos y cartílagos, y establecer de esta manera el terrible cáncer terebrante que erece incesantemente.

El *ulcus rodens* ya citado se caracteriza por pequeñas úlceras redondas, de bordes duros, que no sangran. Se desarrollan con tentitud y durante mucho tiempo, hasta alcanzar el tamaño de una naranja.

Este tipo se presenta a menudo en las caras laterales de la nariz, surcos nasogenianos, regiones temporales, surcos pre y retroauriculares, párpados inferiores, y regiones infraorbitarias.

Estas dos variedados son las mismas descritas antiguamente por Ranvier y Cornil, bajo otras denominaciones.

Además, se observa con frecuencia entre los espinocelulares y basocelulares, formas mixtas, o híbridas, o intermedias, que se originan en la capa basal y en la espinosa (a cuyo conjunto se da el nombre de capa de Malpigio, es decir, a las dos capas donde se originan dichas formas). Una de estas formas es la "destructiva" (ulcerosa), y otras crecen en superficie, formando una "carnosidad". Estas formas mixtas ofrecen en una misma neoformación la disposición trabecular de los basocelulares y la formación de globes epidérmices de los espinocelulares.

Ya constituídas las trabéculas tienen que modificarse y avanzar en profundidad para formar, mediante su propia actividad, el globo epidérmico; y así sucesivamente aparecen estas dos figuras. Tal propiedad la conservan aún emigrando las células enfermas a los ganglios u órganes distantes.

De todos los cánceres, los cutáneos (de los cuales el 95 por ciento se localizan en la cabeza) son los que pueden diagnosticarse más fácil y precozmente, ofreciendo, además, menos dificultades y riesgos para su tratamiento, y dando un mayor número de curaciones.

Aparte de los epiteliomas que tienen su asiento en la piel, tenemos otros importantes que se localizan en la lengua, la mucosa bucal, las paredes intestinal, estomacal y uterina, etc.

Los epiteliomas de las mucosas ofrecen aspectos muy variados, según el órgano afectado. Unos presentan una úlcera plana o crateriforme, cuyo fondo reposa sobre la parte viva, que ofrece brotes desordenados. Otros presentan gran volumen y descansan sobre una base endurecida, son los medulares o vegetantes. Y otros son de infiltración difusa, con tendencia a la destrucción rápida, en las formas blandas, mientras que en las formas duras tienen una marcha lenta.

Los carcinomas de las mucosas, generalmente, se desarrollan más, se doblegan difícilmente a los rayos X, dan metástasis y son más graves.

Mencionaremos, además, entre los tumores de clasificación discutida los "tumores de Grawitz" o hipernefromas, el corio epitelioma y los adamantinomas.

En la otra especie o sea en los cánceres correspondientes a los tejidos conjuntivos tenemos los SARCOMAS, que son de origen, estructura, desarrollo clínico y radiosensibilidad muy distintos entre sí; y en los cuales la neoformación no llega al estado adulto, pues son tumores conjuntivos embrionarios, atípicos (heterólogos).

Entre los sarcomas nos ocuparemos de los linfosarcomas (este nombre no se da indistintamente a todos los sarcomas ganglionares). Los linfasarcomas presentan una textura un tanto semejante a la del tejido adenoideo de los folículos linfáticos. Se distinguen del sarcoma de células redondas (grandes o pequeñas) o globocelular porque aquellos tienen un armazón reticular muy fino que aprisiona en sus mallas los elementos parenquimatosos; y los segundos, si poseen trama es del estroma, y deriva de los sitios donde asienta el tumor; en cambio, en los linfomas sarcomatosos, o sea en los primeros, el retículo se forma del propio tejido tumoral.

Según el grado de madurez, se distinguen tres grupos: "sarcoma reticular puro" (el más malingo e inmaduro); "sarcoma con

células linfoblásticas''; y ''sarcoma con linfocitos''.

Los linfosarcomas se funden fácilmente, mediante la roentgenterapia (''como la nieve al sol'', al decir del Dr. Antonio Beclere); por lo cual se ve desaparecer voluminosos linfosarcomas de la amígdala, de la faringe, etc., y aún se ha visto regresar extraordinarios tumores intratorácicos. Desgraciadamente estas ventajas locales de la terapia se ven defraudades por la frecuencia de las metástasis.

A los sarcomas suele agregarse con la denominación de ''miosarcomas'' y de ''gliosarcomas'' las formas correspondientes de los miomas y de los gliomas.

Los músculos lisos o estriados originan los miosarcomas, que son raros, toda vez que la célula muscular es una de las más diferenciadas, pues, no prolifera desde que ha adquirido su carácter funcional propio en el embrión y si llega a proliferar lo hace muy lentamente. Más bien, se encuentran tumores de otros tejidos que presentan fibras y haces musculares y que vienen a constituir más propiamente el miosarcoma.

Con más razón la célula nerviosa es reacia al cáncer, por ser la más diferenciada. Por lo tanto, debido al tejido conjuntivo, la invasión canceroso será más frecuente en el tejido muscular.

De las formas jóvenes de los tumores constituídos por el tejido nervioso, tenemos las formas sarcomatosas del glioma, o gliosarcoma, que están formadas por elementos jóvenes de intensa actividad, con poca tendencia a evolucionar para convertirse en adultos. Tienen poca trama y pocas de las pequeñas células características de la neuroglia; pero tienen en gran cantidad otras células más grandes, polimorfas, fusiformes, y frecuentemente plurinucleadas.

En el caso de que los elementos sean muy atípicos y, por consiguiente, imposible diferenciar la naturaleza exacta del tumor, puede admitirse, según muchos autores, que se trata de una tumoración mixta, al mismo tiempo neuróglica y conjuntiva, aplicando entonces el nombre de gliosarcoma.

Los gliosarcomas son tumores blandos, con muchos vasos. Crecen rápidamente. Son muy invasores, y pueden hacer metástasis que, generalmente, no se alejan del neuroeje.

Estas formas inmaduras, como se ha visto, son conocidas con el nombre de ''sarcomas'' que quiere decir ''parecido a la carne''. Como hemos visto anteriormente, no sólo llevan el nombre de ''sarcoma'' los tumores del tejido conjuntivo propiamente tal, sine también los que provienen, en general, del mesodermo (tejido vascular, óseo, cartilaginoso, nervioso, pigmentario, muscular). Tal elasticidad en la aplicación de la palabra ''sarcoma'' ocasiona confusiones, por lo que muchos opinan que ese nombre se aplique sólo a los tumores del tejido conjuntivo.

Entre las formas adultas, típicas (homólogas) del grupo conjuntivo vascular, citaremos el osteoma sarcomatoso, cuya forma corresponde al osteoma que está constituído por una parte de tejido óseo y otra de tejido medular, en proporciones variables.

El tejido óseo prolifera, pero con lentitud; de ahí la poca frecuencia de los osteomas. Los tumores de los huesos son, por lo general, sarcomas periféricos o centrales, según que se localicen en la superficie o en la care interna del hueso.

Estos sarcomas se presentan, por lo regular, en la juventud, cuando ha concluído el desarrollo de los huesos. Dan lugar a metástasis, eligiendo para ello, de preferencia, el tejido pulmonar.

También la médula ósea puede ser asiento de un sarcoma específico a ella, llamado sarcoma mieloide.

Hemos visto cómo los órganos hematopoyéticos son susceptibles de cancerizarse y es fácil deducir que hagan también metástasis en la sangre y la linfa, a pesar de su independencia aparente con estos elementos.

En suma, no hay órgano o tejido que resulte invulnerable a la anarquía cancerosa.

Permítaseme hacer, ahora, algunas consideraciones acerca de la edad de los tejidos y el cáncer. El grado de receptividad para éste se valoriza por la edad relativa de los tejidos en el organismo. Así, tenemos esta escala, del más viejo al más joven; el tejido nervioso, el muscular, los parénquimas, los epitelios de los órganos digestivos, los de las glándulas y los de la epidermis. Este tejido,

verdadera corteza de nuestro cuerpo, se renueva incesantemente, manteniéndose en una juventud obligada y constante. Pero el tejido conjuntivo de la dermis tiene cierto predomino sobre las células epiteliales, toda vez que sus elementos no se renuevan, y llegan, como es natural, a envejecer. Las arrugas de la cara, por ejemplo, son un síntoma o un exponente de esta vejez.

Generalizando este problema, podemos, pues, considerar la predominancia de los tejidos conjuntivos, sobre todo de los más profundos, como triste privilegio de la antigüedad.

Los sarcomas se presentan con más frecuencia en las personas de edad avanzada y los epiteliomas en los jóvenes de acuerdo con lo antes enunciado.

De modo que el cáncer ejercita su doble acción de desorganización en una escala también doble: el organismo y la colectividad.

En el laboratorio se emplean los mamíferos, particularmente los ratones, para el estudio de los epiteliomas. En cambio, las aves se prestan de preferencia para los sarcomas (miosarcomas, condrosarcomas). El porqué de esta elección estriba en la ley general que rige la evolución de la vida, y mediante la cual unos tejidos vienen a ser más antiguos que otros (sea en forma absoluta o relativa); lo que constituye un factor (''terreno'') en las diferentes clases de cáncer, pues como es sabido, los mamíferos son más jóvenes que las aves. Estos datos nos imponen discreción, como dice Labadié, al aplicar al hombre las experiencias efectuadas en animales, ya que el hombre es más joven que éstos.

Y si pensamos en las magníficas experiencias realizadas con los cánceres de los vegetales veremos que se encuentran muy lejos de poderse utilizar en beneficio del hombre, pues el cáncer de las plantas ''no tiene ningún indicador en cuanto a la etiología del cáncer humano'', como expresa Labadié.

Conociendo bien la morfología del terreno canceroso se hará sobre seguro la operación quirúrgica oportuna, que tantos éxitos ha tenido.

RESUMEN

El cáncer, según hemos visto, viene a ser el producto biológico o el resultado del desequilibrio de la proliferación celular.

El cáncer, que parte de una célula enferma, progresa por expansión concéntrica, dando la impresión de que no le importa la invasión general.

La neoformación cancerosa es autónoma en profundidad, en cuya virtud emite raíces a su alrededor, las cuales forman acodos (como llaman los jardineros), formando así nódulos secundarios que a su vez dan origen a nuevas ramificaciones, también autónomas.

Mientras el cáncer sigue su marcha invasora la región invadida se encuentra entumecida, y ésto constituye, en clínica, un signo importante que ayudará a hacer un diagnóstico precoz, el cual servirá de base para la aplicación de la cirugía.

Iniciado el proceso canceroso, éste se desarrolla mediante el retroceso, por compresión mecánica, de los tejidos normales, y mediante la destrucción de los mismos, originada por la acción físico-química corrosiva de los líquidos cancerosos que abren rutas para la extensión del tumor.

El tejido normal invadido no sabe defenderse, observándose más bien una recacción de alarma que, clínicamente, se caracteriza por una inflamación local y por el dolor consiguiente.

El cáncer adquiere la fase general o a distancia debido a la migración anárquica de sus células, que se fijan en otros órganos.

El cáncer juega en dos tableros anatómicos: epitelial y conjuntivo (o conjuntivo vascular), es decir, en los dos tejidos ''límites'' que constituyen la gran clasificación biológica y que, justamente, corresponden a las des especies de cáncer: epiteliomas y sarcomas, respectivamente, dentro de los que existe cierta gama que integra el cuadro patológico de estas neoformaciones.

La célula cancerosa ostenta un carácter de orden general: posée los atributos de una célula ''joven'' en vías de proliferación rápida; o, mejor, de una célula embrionaria, ya se trate del tejido epitelial, que es esencialmente activo, ya del conjuntivo, que es, diremos, casi ''inerte''.

El cáncer, prácticamente, no respeta ningún tejido, pues invade hasta el mismo ''tejido líquido'' o sangre.

En el estudio del cáncer debe tenerse pre-

sente que el tejido conjuntivo representa una edad relativamente mayor que el tejido epitelial; y que los sarcomas son más frecuentes en las personas de edad avanzada, en tanto que los epiteliomas se presentan más en los jóvenes, pues la edad es un factor poderoso cuando se trata de determinada especie a desarrollarse.

En cuanto a las experiencias de laboratorio practicadas en animales, los mamíferos son los mejores receptores de los epiteliomas, así como las aves lo son de los sarcomas. Todo lo que está de acuerdo, precisamente, con su edad relativa: los mamíferos son más jóvenes que las aves.

Y, por último, el resultado de las investigaciones practicadas en el cáncer de los vegetales (más antiguos, con relación a los animales) está muy lejos de poderse utilizar en beneficio de los seres humanos.

Conociendo, pues, bien la morfología del terreno canceroso se hará sobre seguro la operación quirúrgica oportuna, que tantos éxitos ha tenido.

SUMMARY

The author stresses the importance of the understanding of the morphology and histogenesis of cancer, and of the individual cancer cells, a knowledge which is vital for success in surgical treatment of cancer.

EMBARAZOS ECTÓPICOS

(Continuado desde página 473)

sódico por via endovenosa, permiten conjurar estos procesos patológicos, aún en sus momentos mas críticos.

SUMMARY

The author discusses the etiology, pathology, clinical manifestations and differential diagnosis of ectopic pregnancy, and presents his personal observations on 43 cases operated upon by him. He feels that the "endometriosis hypothesis" best explains the ectopic nidation of the fertilized ovum; in support of this hypothesis he cites the findings of endometrial tissue in the zone of ectopic gestation by such investigators as Sampson, Calantroni, and Aldo Rafo.